Paradoxes of Technology and Human Behaviour in Japanese Higher Education

Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor of Education by Frances Jane Shiobara

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Abstract

Over the past decades digital technology has become ubiquitous in Japanese society in general, but its use in education has not matched the use in other areas. Students and teachers use digital technology for communication, entertainment and research, but it's use in classrooms in Japan is still very limited.

This doctoral thesis is an investigation into the paradox between the ubiquity of digital technology in Japanese society in general, and the limited usage in Japanese higher education. Using Grounded Theory, it examines the perceptions of teachers and students to technology in order to investigate the potential for educational technology to improve learning. The results showed that fear of loss of control was a major factor in the decision of whether or not to use digital technology by teaching faculty. In addition, it clearly shows that the widespread perception that younger generations are more enthusiastic about educational technology is incorrect. In many ways the students were less enthusiastic about using digital technology and wanted more traditional styles of teaching, while the teachers were eager to learn how to use new technology in their practice.

The research adds to the field of educational technology by showing that it is not a lack of technological expertise on behalf of the teachers preventing technology use. The main factors in deciding whether or not to incorporate digital technology in the classroom by teachers were based on retaining control and reliability of the technology. Teachers were encouraged to use technology by its ease of use and technological support in the case of problems. This thesis offers recommendations as to how institutions can improve trust between teaching staff and university administration to maximise the effectiveness of digital technology within the university. The paradox of technology might be explained by teachers' reluctance to give up control of the classroom to technology and a lack of knowledge of the potential of educational technology by teachers and students.

Keywords Educational Technology, Grounded Theory, Japanese Higher Education, Mobile Learning

Writing style

Throughout this thesis to protect the anonymity of the participants as much as possible gender-neutral pronouns have been used when referring to the teachers and administrative staff. This was done through the use of ‘they’, ‘them’, and ‘themselves’ even when referring to one participant. It may sound awkward at some points, but I felt it the best way to avoid identifying genders. As all of the students in the university are female and a small number of them were used for this research the pronoun was kept as ‘she’, ‘her’ and ‘herself’ when referring to students.

Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for any other award or credit at this or any institution of higher education. To the best of my knowledge, the thesis is wholly original and all material or writing published or written by others and contained herein has been duly referenced and credited.

Signature: Frances Shiobara

Date: 5th July, 2018

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Chapter 1: Introduction to the Research

As digital technology has had such a profound effect on every aspect of society, it might be expected that it would also impact education. Yet despite commentators and organisations, such as the OECD (2015, p.4) stating that technology is the best way to expand access to knowledge, allowing access to materials beyond textbooks, and enabling collaboration and new styles of inquiry-based pedagogy, as well as the massive investments in technology by schools around the world, the impact of digital technology has been limited in education (OECD, 2016).

I became fascinated by this paradox, as I looked at people on the street, on the train and in almost every other realm of modern life they were attached to digital technology all the time. Technology has changed the way that people; find information, get news, read books and share their opinions and observations. “Google and Wikipedia are the first places that millions of people turn to when wanting to access information and find things out.” (Selwyn, 2015, p.1). However, as I looked at most of the classrooms in my university as well as my children’s elementary, junior and senior high schools they were not much changed from the 1950s. There are basic desks with a chalkboard and notice boards. There is usually a television at the front of the classroom with a video and DVD player, but no computer or electronic whiteboard. Added to which, in the university there are notices stating that mobile phones will be confiscated if used in class. This sense of surprise at the gap between the level of technology in society in Japan and education is echoed by other teachers and researchers. Suzuki (2012) suggests that although 56.4% of teachers in a Japanese government survey stated that they could use technology to teach their subject, the number actually doing so are much lower. Walker (2003) highlights that teachers are so focused on helping students pass entrance tests, that they don’t have time to use technology. In another report Salcito (2010) says “What intrigues me about Japan is that the country has a very technology rich society, but the school systems are technology resistant” (para.1), which is almost the same observation that I made. Most recently Moritz (2017) in offering advice on how to incorporate technology in the classroom says that although Japan is a technological hub,

many schools are still using tape recorders and fax machines. Emerling (2015) supports this by saying that in 2015, 75% of Japanese classrooms used the chalkboard as the primary means of presenting class content.

Most people around the world regard Japan as a technological power house. In fact, in 2011 Japan was found to be number two in the world in terms of an 'Overall Index of Technology' (Florida, et al., 2011). This paradox between the myriad of ways in which digital technology has entered our lives in general, without an equivalent usage of technology in education was what drew me to this topic. As I studied this it became apparent that although this phenomenon might be more obvious in Japan with the enormous gap between technology in society generally and technology used for education, it seems to be happening around the world. In looking at this I did not want to necessarily view it as a problem which needed solving, but as a puzzle. Why has technology had a limited impact on education compared with society as a whole? This might offer ideas on whether education should change and if so, in what ways education could be changed. It might also question the assumptions being made by policy makers as to whether technology really does benefit education. As Selwyn asks, "To what extent is digital technology *really* changing education – and is this *always* in our best interests?" (2015, p.4). After careful study Emerling (2015) observed that although the chalkboard seems to be a primitive piece of equipment, the careful way that Japanese teachers used the chalkboard was highly developed and displays a contrast with American schools as the latter seemed to be caught in a race to adopt the latest innovation, but devices are left unused. He concluded that Japanese teachers may be ahead of the U.S. in the way that technology is integrated, incorporating only technology which will enhance learning. I would like to investigate how this might be true in a Japanese university. I decided to focus on teachers and students, as they are the ones who make the daily decisions on technology use.

I will try to approach this study with an open mind, but conscious of what I bring to the research. I have lived and worked as a teacher in Japan for 28 years. In that time as well as teaching classes from kindergarten through to university, I have observed numerous teaching environments and teachers. I have also observed the classrooms where my own children were taught from

kindergarten through to high school. Through this fairly unique experience I have been able to see education in Japan from the point of view of a parent, a teacher and a researcher, as well as comparing it with my experience of education in the UK.

When I first became interested in this paradox between the possibilities offered by digital technology and the dearth of usage in formal education, I tried to initiate mobile assisted language learning (MALL) in my university. Initially I encouraged students to use MALL through action research. I enrolled all my students in an online reading program (Learning A to Z, n.d.). Unfortunately, although I thought students would welcome the opportunity to use mobile learning, there were numerous problems that came out in a focus group. Comments made by students ranged from not wanting to waste their mobile phone battery time or data package on study, to complaining that their mobile phones were for leisure and they did not want to use them for study. This seems to be supported by Selwyn (2009) who found that when students were put in Facebook study groups, only 4% of their interactions were related to their studies and the rest were for organising social events and other extracurricular communication. We often hear of new initiatives to increase the use of digital technology in classrooms (OECD, 2015; UNESCO, 2012). These initiatives are backed up by the belief that technology is beneficial to education, despite recent studies, which seem to indicate that technology is not necessarily effective in education. For example, countries with lower investments in technology achieved higher scores on the PISA tests (OECD, 2016).

In order to investigate the paradox of the ubiquitous use of digital technology in society in general and its limited implementation in education I decided to find out the perceptions of teachers and students of their use of and experiences with mobile technology. Although students are the consumers of educational technology, it is generally institutions, who decide what type of technology to invest in, and teachers, who make the decisions on what type of learning will take place in the classroom, and who implement new learning initiatives. As OECD (2016) stated;

> The successful integration of technology in education is not so much a matter of choosing the right device, the right amount of

> time to spend with it, the best software or the right digital textbook. The key elements for success are the teachers, school leaders and other decision makers who have the vision, and the ability, to make the connection between students, computers and learning. (p. 85)

1.1 Research Setting

As I wanted this research to be relevant to my current workplace I decided to focus on the teachers and students in my university, although it is hoped that the results may be applicable to other institutions, especially in Japan. Due to the fairly unusual situation of an all-women's university, with very little technological infrastructure I felt it was necessary for the research to be carried out in this environment. Additionally, due to the aging demographic of teachers in my department this was a very interesting place to gather data. In many studies on educational technology the teachers concerned are technology innovators and the voices of what I will call 'technology averse' teachers are rarely heard. The data gathered was from a variety of teachers with different perceptions of digital technology, with an average age of 54 years old. There are two groups of participants – teachers and students. The group of participants described as teachers, are in fact all tenured university faculty. The university has about 85 tenured faculty in total, although only thirteen members in the English department. In Japanese universities generally all tenured faculty have a teaching load from the president of the university down. There are administrative staff, but these in general do not hold academic qualifications above a bachelor's degree. The role of tenured faculty in the university is divided into three parts; teacher, researcher and administrator. All administrative departments are headed by a tenured faculty member. This research, focused on the teaching aspect of their role and this was the main aspect of the participants' work that was investigated, but they were also asked about their perceptions of the university intranet, used to communicate between full-time staff in the university. One of the professors is also head of the office of academic affairs department and was asked questions about how the administration feels about digital technology.

Johnson (2013) interviewed various professors and found a negative perception of educational technology, due to doubts as to its effectiveness to aid learning as well as a feeling that pressure was being put on them from the

university administration without consulting them in advance. I decided that I would like to further investigate these perceptions in my university.

In this research, the definition of digital learning is any type of learning, which is assisted by digital technology. Technology is sometimes defined as just DVDs or CDs, whereas more recently some people only regard computers or more complex forms of connected online technology as 'digital technology'. Due to the intensive interviews, it was possible to identify how the participants defined technology. Each teacher's definition of technology was accepted, but explained within the data findings.

1.2 Overview of Thesis

The remaining chapters of this thesis are divided into seven parts. Chapter 2 is the literature review. It will outline previous research into educational technology and theories of educational technology with some explanation of the sociological research into educational technology and teaching faculties' perception of change and control. Inclusion of a literature review in grounded theory is controversial (Charmaz, 2014, pp. 306-307), but ultimately I felt it was necessary to meet the requirements of this thesis. A more detailed explanation of literature review in grounded theory is included in the methodology. Chapter 3 is the methodology, which will give a detailed explanation of the style of grounded theory used. Chapter 4 is the findings, which are laid out with various quotes from teachers and students. Based on the findings in Chapter 4 an emergent theory behind the lack of technology uptake in education and a possible framework to improve the technology use within higher education is proposed in Chapter 6. Chapter 5 contains a comparative literature review, which is sometimes used in grounded theory to avoid reading too many similar studies until after the data is collected to ensure that the findings emerge from the data rather than previous studies. The comparative literature review contains literature that can be compared to the findings. Finally, the discussion of the findings and answers to the research questions are examined in Chapter 7. Chapter 8 contains my conclusions and recommendations for further study.

Chapter 2 Initial Literature Review

Some proponents of Grounded Theory recommend not conducting a literature review before carrying out the research, although in recent years with the growth of constructivist grounded theory, a variety of researchers are including literature reviews in their research (Charmaz, 2014, p. 306). As I had read extensively before deciding to carry out this research topic it would be disingenuous to pretend that I had not conducted a literature review, however I attempted to leave reading about any topics relating to the findings until after they had been analysed. This 'comparative literature review' appears in Chapter 5. In this initial literature review, I have attempted to outline the current state of educational technology, the history of educational technology and a few of the major theories which have been proposed about the social and political nature of technology and its implementation.

2.1 The State of Technology Usage Around the World

Although there are vastly differing statistics on the use of technology around the world, varying in the way in which it was measured, the target groups and the time it was measured, it is still useful to see how ubiquitous the use of technology has become. Furlong and Davies found that across the UK in 2009, 95% of young people aged 8-19 regularly used a computer, 88% used the internet, 82% played computer or console games, 76% used a mobile phone and 70% used an MP3 player (2012 p.50). UNESCO (2012) found that in Asia the majority of people own mobile phones with nearly 70 mobile phone subscriptions per 100 inhabitants (p.9). In Japan where this study is based 95.4% of inhabitants had mobile subscriptions in 2012, which rose to 125.05% in 2015 (International Telecommunication Union, 2016). The data also suggests that people in Japan are purchasing mobiles phones in lieu of personal computers, with only 88.5% of households having a computer in 2012. In some countries, such as India, the difference is even more pronounced with 61.4% of inhabitants having a mobile phone subscription, but only 6.1% of households having a computer. As there may be a number of inhabitants in each household, this could mean that a household has a number of mobile phone subscriptions, but only one shared personal

computer. The price of mobile phones seems to be a key factor, but it is obviously not the only factor in an affluent country such as Japan. As far as technology in education is concerned there is very little data on mobile devices being used in education, but Bulman and Failie (2015) found that there are 0.95 computers per student in schools in the US, 1.02 in the UK, and 0.56 in Japan based on PISA data, indicating that most students in developed countries have access to computers at school, but Japan's level is quite a lot lower than the UK or USA.

These statistics all point to very widespread use of mobile phones in daily life, and the fact that people are choosing to buy the more expensive smart phones indicates that mobile phones are being used for far more than just telephoning and texting.

2.2 Historical Use of Educational Technology

It is easy to imagine that problems with implementation of technology date from 1989 and the era of the internet, but education has always had a difficult relationship with technology (Selwyn, 2017). From the beginning of the twentieth century there have been audio-visual technologies such as radio, film and television. With the advent of film some educators thought that the motion picture was destined to revolutionize education, and possibly replace textbooks (Cuban, 1986). Selwyn (2017, p. 51) cites a number of commentators at that time saying that film could combat ignorance and bring the classroom to life. Research into the benefits of using motion film in education was almost entirely positive. Gradually however, there were found to be very few learning gains from the use of film. By the 1950s despite the popularity of motion pictures as a form of entertainment, they were used less and less in education. In a national survey of teachers in 1955 it was found that teachers thought that they did not have enough time, there was not enough central coordination and classrooms were not suitably equipped to incorporate film in education (Hornbostel, 1955). It is interesting to note that 'Educational Technology Research and Development', the journal in which that article appeared, was first published in 1953, long before the advent of the Internet. Next came educational radio. This too was thought to bring about a seismic change in education. 'Schools of the Air' had the potential to deliver

remote access to education, just as online programs can do now. Bianchi (2008) estimated that nearly 10% of American school students used these educational programs. It was believed that young people's interest in radio in general would transfer to the classroom. Gradually educational radio was used less and less with the reasons cited as; lack of equipment, lack of time, poor reception and teachers not interested. These reasons are very similar to some of the reasons being cited for teachers not using digital technology in the classroom today (Selwyn, 2017).

The reason that this research into historical use of technology is interesting is to show that there has always been a conflict between education and technology. Although the reasons cited are similar there have been few in-depth investigations, and we are still making mistakes investing vast sums of money on technology without fully examining its benefits and problems.

"While mobile learning is not and never will be an educational panacea, it is a powerful and often overlooked tool in a repertoire of other tools that can support education in ways not possible before." (UNESCO, 2013, p.8) This is true in some ways, but as Selwyn (2016) points out deciding what supports education is a value-laden matter. Some data, such as Pisa scores, seems to indicate that increases in education technology lead to lower scores (Bagshaw, 2016), but education is about more than purely test scores and Selwyn (2016) states that technology clearly helps in some other areas of equal importance, such as socialization and subjectification. Educational ideologies such as intellectual development do not fit with a market model treating education as a product (Losh 2014).

2.3 Social Theory on the Use of Technology in Education

Studies of educational technology tend to focus on what could happen and what should happen, focusing on the potential uses of technology in education without considering the wider social aspects of technology in education and society (Selwyn, 2012). There seem to be two main ways in which technology innovation is not being considered. The first is the various political and social pressures, which may be exerted on teachers and academics to use technology. The second is the lack of comprehension by

administration, teachers and academics as to the gap between themselves and their students.

The social positioning of technology makes it clear the decisions to use technology are not taken in a vacuum, but are affected by the community around the teacher, the social capital and the political situation. Social theory is central to the place of technology in education. The political nature of technology connected to social and power relationships gives a whole new angle on technology adoption (Hall, 2011). Contrary to the Technology Adoption Theory (Venkatesh, Morris, Davis, & Davis, 2003), Hall (2011) states that adoption of technology is not only dependent on the attitudes of teachers and learners; they are subject to numerous outside pressures. Adoption of technology is seen as a historically situated construct affected by education and modernity. The pressure to innovate places teachers in a situation where they feel that they need to incorporate technology in learning, however technology also involves workplace automation and surveillance. Learning management systems allow teachers to monitor their students but they also allow institutions and supervisors to monitor teachers. They can provide quantifiable data on student achievement, which is not necessarily a true reflection of what has been taught or learnt in a class. There is a view that technology is not taken up sufficiently quickly due to failure by educators to embrace new pedagogies, but the reasons for lack of adoption have not been well examined. Hall (2011) asks whether technology is truly revolutionary. This echoes many other studies that find teachers to be using technology for old-fashioned styles of learning such as rote learning, or classroom management (Burston, 2013; Johnson, 2013). Hall (2011) also questions whether technology in fact marginalises academics outsourcing some of the research work with technology and reducing the collective power of academics. Investing in technology is like cycling up hill. As soon as you stop investing in new technology you start falling behind other institutions. Universities are valued for their technological advancement, but as soon as other institutions catch up, the university is under pressure to invest in newer advancements. This puts pressure on academics and students to constantly learn new technologies and implement them in learning and teaching. It also diverts resources from other areas of the institution. This constant pressure

seems to not only take away from other forms of study, but also creates a never-ending pressure to keep up with the wave. The reluctance of some academics to keep up with this relentless change has caused academics to be criticised for not wanting to engage with technology. Hall (2011) states that new social theory is needed that reflects the aspirations of staff and students on the use or non-use of technology in a dramatically changing world. There is a delicate balance between those who have power over the use of technology and those who are given access to technology. Many institutions are investing in learning management systems. The decisions are made mainly by the administration, but a lot of pressure is put on teachers to receive assignments through these systems and to set tests and quizzes online using this system. Selwyn (2017) noted that learning management systems allow the workforce to be controlled without direct supervision, with administration able to observe the assignments being given, grades and even feedback. Losh (2014) comments that there have been cases where teachers have been disciplined after pictures of them at parties were seen on Social Network Systems. Students are also being monitored by teachers and administration. Through Learning Management Systems teachers can monitor when students did their homework and how long they spent on an assignment. Gregg (2011) even found that people felt they were being monitored through group emails. This can be very true in intranet systems where numerous people see the thread of conversations. Data from Learning Management Systems could also be used by governmental bodies to monitor institutions (Selwyn, 2016), thus data in digital systems even though it might not be the intention has the potential to be used to monitor and control every level of education.

2.4 The Gap in Technology Use Between Teachers and Students

In 2001 Prensky wrote his now famous article calling people who grew up after the digital revolution ‘digital natives’ and people who grew up before the digital revolution ‘digital immigrants’. Although this appeared to be a neat analogy, showing older people to not be able to adapt to new technology as well as younger people, this has now been refuted by a number of researchers. Bayne and Land (2011) stated that the ‘digital native’ discourse is an over-simplification of a complex issue. Despite claims that people

growing up surrounded by technology will be able to adapt to new technology more quickly than their older counterparts, there is no evidence to support this position (Bennett, Maton, and Kervin, 2008). Individual differences seem to play a far greater role with the knowledge of many young people being patchy. For Clegg, Hudson, and Steel (2003) this theory forces teachers into a role merely following students as the digital natives, whereas students still have much to learn from teachers on the way that technology can be used and in particular how it can be used for learning not just leisure activities. Helsper and Enyon (2010) also found no support for the view that there are significant differences in technical ability between generations. They state that this rhetoric is dangerous as it implies that the younger generation are fundamentally different and should therefore be taught in different ways, and also that interaction between teachers and students will be difficult due to their different status as ‘immigrants’ or ‘natives’, which appears to be the antithesis of Dweck’s (2017) growth mindset.

There is evidence that some teachers do feel a sense of inadequacy regarding technology in the face of their students’ knowledge, but also that some teachers may be over-enamoured with technology. Selwyn (2012) states that teachers find it difficult to think dispassionately about technology in which they have become passionately absorbed. For example, if a teacher has invested a considerable amount of time learning how to use a learning management system they would be reluctant to accept that it was not enhancing learning for students or that students were wasting time trying to understand the learning management system, which could be spent on more productive learning. The experience of teachers encountering technology is quite different than students. In my own institution, most students have smart phones and use them constantly to communicate with their friends, but very few have their own computer and most of them do not have access to a computer at home. Teachers must consider that not all students have access to a computer to do their homework, and assignments should be set accordingly. Selwyn (2012) notes that feminist studies are another area in which technology has been examined. Many researchers have noted that gender affects the design and use of technology. Although some feminists argue that technology is mainly designed by men for men, there are more

liberal feminists arguing that technology is adapted by women to the way they want to use it. In my experience, female students have taken mobile phones and adapted them to themselves with the interface and scripts they use. In my own institution, as a women's university I have seen that mobile phones are far more popular than laptops or even tablet computers. One of the reasons for this is that female students often do not want to carry large bags to school with laptops. Although this may appear to be a superficial observation it greatly affects the way that technology is used and not used. Another way in which gender affects technology is that women are more likely to admit that they cannot use digital technology and ask for help (Wajcman, 2010).

Technology is often viewed in a very deterministic way, with institutions and teachers reacting to technological change rather than initiating change. There has been an underestimation of the variety of ways in which users interact with technological devices (Selwyn, 2012). The way that I might use a smartphone is quite different from the ways in which my students use them. "It should be clear that any sensible analysis of young people, education and digital technology should strive to analyse the exchanges between everyday practices and the encompassing cultural and societal structures." (Selwyn, 2012, p. 91). Social Construction of Technology (SCOT) studies have aimed to show that technology is shaped socially rather than being the product of a particular innovator. In this way technology is interpreted differently for different social groups. Importantly these groups will often have diverging interpretations of technology and how it should be used (Selwyn, 2012; O'Brien, 2014). In terms of education, students and teachers may have different interpretations on the use of technology, but also the university administration and technical staff within the university may have different interpretations. Friction might arise between non-teaching administrators and teachers, with teachers feeling that change is being imposed on them rather than implemented with them (O'Brien, 2014). Selwyn (2012) concludes that any analysis of education and technology should compare the everyday practices of young people and technology with cultural and social factors affecting them. As stated in the introduction it is the paradox of usage that makes this study interesting, the differences in the ways that students and

teachers use digital technology are marked and can be seen not as digital immigrants and natives, but as different ways of using technology.

2.5 Technology Use at Home and School

There are many ways in which technology is changing the traditional relationship between study at home and school and the input of family members. Furlong and Davies, (2012) argue that young people's ubiquitous access to mobile technology is breaking down the traditional boundaries between home, school and leisure. Many students access technology mainly in the home rather than in formal learning situations, due to convenience and ease of access. Selwyn & Facer (2014) state that accessing technology at home has led to increasing pressure placed on families to educate children, with families expected to have a far greater input helping young people with using their digital devices as well as advice on learning. Although learning has always taken place at home, the cost of technology can increase the social divide between students and with different socio-economic status, race, and family educational backgrounds. Some students receive excellent resources, support and advice at home and others are struggling alone without access to technology at home. In the United States 98% of students living in households with an income of over $100,000 had access to computers, but only 67% having access in households earning less than $25,000 (Bulman & Failie, 2015).

2.6 The Effectiveness of Technology in Education

As far back as 2002, Angrist and Levy found very limited improvement and some negative results from a wide scale implementation of computers in classrooms across Israel. As a result of the negative and negligible effect of computer investment Angrist and Levy (2002) came up with a number of possible explanations for their findings. Firstly, they thought that the effect of computers on maths and Hebrew language learning that were tested, might not reflect the advantages of computer assisted instruction. Computers may encourage critical thinking skills and self-motivated learning rather than standardised test scores. Secondly, they suggested that investment in technology may have displaced investment in other areas. It was estimated

based on the cost of computers, software, up-keep and training that approximately 40 computers have an equivalent cost to one teacher per school per year. Their final conclusion was that what they call ‘traditional inputs’, such as reducing class size and increasing teacher training, have substantial benefits compared to investment in technology. More recently in a review of various empirical studies into technology and education Bulman and Failie (2015) found that in many cases investment in technology was not the best way to improve academic outcomes. Belo, Ferreira, and Telang (2014) found that across all age levels increased levels of broadband usage in middle schools in Portugal appeared to have a significant detrimental effect on student grades. In addition, Andreas Schleicher head of education at the OECD questioned whether technology was doing more harm than good. This comment was based on the fact that PISA test scores seem to indicate that students who use computers less at school achieve higher scores (Bagshaw, 2016). The question is what PISA scores are measuring, and whether the digital skills students are engaging in are encouraging higher level skills, referred to as ‘Transcendent skills’ by Magana (2017). Glance (2015) stated that the availability of computers does not change the fact that teachers need to introduce and practice basic skills. It seems to indicate that technology is still a tool for students and teachers not a replacement for teachers. Although some researchers feel that with the improvements in Artificial Intelligence (AI) this could change in the future (Edwards & Cheok, 2018).

2.7 Theoretical Frameworks and Models on Technology Adoption

Although there are a number of well-known theories of technology adoption none of these fully explain teachers’ perceptions of technology and the complex process that goes into deciding how and when technology should be used. Perceived usefulness and ease of use were found to be significant by Davis (1989) and Venkatesh and Davis (2000) in the TAM model, but it does not explain the teachers’ and students’ perceptions of technology. As technology has advanced significantly since these models were written perceptions might have changed, it may be that teachers consider technological expertise to be one of the skills necessary to be considered a competent teacher as proposed by Mishra & Koehler (2006) in the TPACK

model. This model states that technological, pedagogical, and content knowledge are all necessary for a teacher to be considered competent. In this way teachers may feel pressure to learn how to use technology if they wish to be considered a competent teacher in the 21st century, which also helps explain why teachers would be hesitant to use technology unless they were completely confident that it would work correctly. Teachers may feel that appearing to not be able to use technology may indicate professional incompetence. The irony is that technology is complex and can be unreliable through no fault of the teacher.

As stated earlier, technology may not be having an observable effect on educational outcomes due to the way it is being used or the way learning is being assessed. Both the T_3 Framework (Magana, 2017) and the SAMR model (Puentedura, 2013) refer to the depth at which technology is being used. Simple substitution of technology to do a similar task than without technology is the most common way in which technology is implemented, but technology has the potential to change the way that learning takes place. Flipped classrooms often utilise technology to provide input outside the classroom, so that the classroom can be used for social constructivist activities, such as debate and discussion. On a deeper level technology could also change the way that knowledge is perceived. Although many forms of assessment are still based on memorisation, in the era of the internet and search engines, is it necessary for humans to store knowledge? Should education be used to develop other skills, such as research-based activities and critical thinking?

Although these models of technology are useful in seeing the ways that technology can be used and what types of technology might be possible in education, none of them really answer the central question of this thesis - in what ways it is suitable to implement technology in education and how teachers' and students' perceptions affect this.

Chapter 3: Methodology

3.1 Introduction

The primary concern of this thesis is the role of technology in education, whether it could be used in a different way and how it could best be

implemented. Initially the focus of this thesis was on mobile learning, but as the research progressed it became obvious that mobile learning and other technology were so closely interconnected that these could not be separated, for example, a teacher using a desktop computer at the front of the class, students using mobile devices, or even students using mobile devices in some situations, but performing the same tasks on laptop or desktop computers in others. The principle focus of the study was to discover what teachers were using technology for, and more importantly their perceptions of technology in education. The focus was on a group of full-time professors at a private women's university, with a small group of students from the same university to compare perceptions of technology.

3.2 Educational Context

My background is as a teacher for the last twenty-eight years; twenty-three of them teaching in higher education. This informs me of a variety of teaching situations and teachers, which can aid my understanding of the teacher and student participants. Additionally, having lived in Japan for twenty-eight years and speaking Japanese helps me to understand the Japanese participants, as well as the native English speakers. In this case the context of a small women's university in Japan was very important as the technology perceptions of teachers and students may be quite different in different contexts.

3.2.1 Institutional context. This research was carried out in my own institution. This was not based on convenience, but on a desire to investigate technology use within my university in the hope that it will be able to inform decisions on implementing technology and improving learning outcomes for students in the future. Additionally, I felt that this type of institution has been under represented in education technology research. Most of the studies in educational technology are either carried out in large national universities with extensive funds or modern technology focused institutions, with a specific aim to incorporate technology in the institution attracting faculty and students with those interests. As technology is now integrated into every aspect of society, it

is essential that technology use at a variety of institutions is investigated, and theoretical frameworks developed that include these types of institutions.

The institution is a women's university in Japan. Student enrolment is approximately 4500 students mainly undergraduates with approximately 85 full-time tenured faculty in total. This study focused on full-time tenured faculty from the English Department, although one fluent English speaker from another department was also included in the study. This is due to the English language ability of teachers and also because ethics requirement in my university was for me to interview teachers over whom I had little or no power. The English Department faculty is made up of approximately two-thirds Japanese nationals and one-third foreign nationals; most of the faculty have had extensive experience living inside and outside Japan. Japanese universities are very egalitarian with teaching faculty holding many of the senior administrative positions. Even the president of the university is required to carry out a regular teaching load in addition to their administrative tasks. Due to this many of the teachers interviewed for this research hold senior positions within the university.

The university is one of the oldest in Japan, it has a very beautiful campus, which attracts students who want to attend a very pleasant university, students are not generally highly motivated to use technology for learning. Very few students bring laptop or tablet computers, but nearly 100% have smartphones, which they use for texting and surfing the Internet. Due to this, most of the students are very skilful at using their smart phones but have limited skill at using other types of technology.

The university has seven computer classrooms, which can be reserved by teachers for classes. These classrooms all have desktop computers; one of them has Apple computers, the rest are operating on the Windows platform. These classrooms tend to be popular and are very difficult to reserve. Additionally, all classrooms have Wi-Fi and large screens, which can be connected to a laptop computer. The university has laptop computers, which can be borrowed for teacher use. Maintenance of the technology in two of the computer laboratories is very good with technical staff in charge of the classrooms not only maintaining the computers but also assisting teachers with any technical issues during classes. Support for teachers using

technology in the Apple computer lab is not supported at all, and the support for teachers using technology in regular classrooms is very limited. The equipment in regular classrooms is checked approximately once each semester, it is not uncommon to find that the previous teacher has removed cords in the back of the screen, leading to various technical issues, but there is no specified technical support in the case of a technical problem during class time. These factors mean that most teachers have no technical support when they are in the classroom and technology in the classrooms is poorly maintained.

3.3 Aims of Research

The aims of the research are to improve the provision of technology within my own institution. This falls mainly into three areas;

1. How the teachers can be supported in technology use.
2. How students can be supported in technology use.
3. How the institution can be informed on the best way to allocate funds and resources for digital learning.

3.3.1 Research questions.

1. Why given the ubiquity of digital technology is its adoption in education limited, especially in Japan?
2. How can the low rate of adoption of digital learning be explained through teacher and student perceptions?
3. To what extent might the reasons for non-adoption of digital learning inform a judgement as to the value of digital learning?

It is important to emphasise that the aim of this research is not to encourage technology use, but to investigate whether it should be implemented, in what ways it might improve learning outcomes, and if it were implemented how that can be done effectively. Hopefully the results of this research will illuminate the nature of the relationship between digital technology, institutions, and practice within institutions.

3.4 Epistemology

This research is firmly situated in constructivist epistemology as described by Moses and Knutsen (2012). Constructivism recognizes the important role of the observer and society in understanding the patterns of social science. In this research, the stance and perceptions of the researcher as well as the perceptions of the participants shape our understanding of technology usage and how that is related to construction of knowledge. Constructivists recognize that people may look at the same thing and see it differently. Some participants may see technology as the future of education; they may see all the possibilities offered by technology. Whereas others see all the problems caused by technology, they see how time can be wasted using technology and that learning would progress more smoothly without it. The technology and context may be very similar for all the participants, but their concept of what technology is, how effective it is in education, as well as their assessment of their own abilities, is deeply rooted in their own ontology about technology. For some teachers, technology is viewed as a natural part of their world, and time spent using technology is necessary. For other teachers, time spent using technology is time wasted that could be spent teaching different skills. This study of teacher and student perceptions is guided by the set of beliefs that I have about the world. According to Guba and Lincoln (2005), knowledge is created through interaction amongst the researcher and participants. This is particularly suitable to answer the research questions (see pp.17-18) in which the concept of digital learning needs to be interpreted by each participant as well as the researcher.

3.5 Choosing the Research Methodology

Initially in this research I thought that I could use mixed methods, including some quantitative research to assess how much and what type of technology is being used, but it gradually became apparent that the definition of technology between participants might differ rendering the results potentially invalid. Brown (2014) stated that using qualitative and quantitative research methods will result in research that supports and cross validates itself making the whole greater than the sum of the parts (p.13). Although in some circumstances this may be true, to answer my research questions and

investigate perceptions into technology use, I felt that large-scale quantitative data would offer few insights and may actually falsely represent the data, by providing superficial answers to what is a very complex problem. Additionally, I had doubts as to the reliability of quantitative questionnaires. Sarkar, (2014) observed participants filling in survey questionnaires in which the respondents were trying to find the 'correct' answer and even asked their friends what the correct answer was. Cohen, Manion, and Morrison (2011) state that the limited choice of answers in quantitative data collection can lead respondents to certain answers, whilst ruling out others. This could prevent the development of new ideas on technology in education. Nielsen (2004) found numerous problems with quantitative data being used in relatively small studies. In very large-scale projects quantitative data can provide valid answers, but the size of this data pool was too small, due to the limited number of English-speaking faculty members.

In his explanation of Narratives and Fiction in educational research Clough (2002) explains that phenomenology is an attempt to illuminate the experience, which leads to the meaning of what has been said. He states that if reality cannot be taken for granted then we must find the instruments by which to study things (p.88). He cites two problems with using spoken data, such as interviews, as science. Firstly, that it is necessary to work through the consciousness of the speaker and secondly, it is difficult to justify a commonality of experience. Although this is true it is not unique to qualitative research. In which case, the evaluation of research should rest not on how data is collected, but whether the research truly engages with the data in a way which is true to its nature. Bohm states that perception is a dynamic process and that by looking at something from many angles we can start to gain a deeper understanding of the thing (Angelos, 2010).

Through qualitative data collection I expect to identify differences in perceptions of technology in education. By conducting intensive interviews, hopefully the consciousness of the speaker will emerge, and some common experiences can be found through interviewing participants of a similar age, with similar jobs and working in the same institution. For these reasons collecting data through intensive interviews and analysing them in depth seemed the most reliable method to gain insight into the perceptions of the

various participants. I felt drawn to grounded theory partly due to the lack of a good theory to explain perceptions of technology usage especially within education, and partly due to the intense analysis of data that takes place in grounded theory. I wanted to use a systematic iterative analysis, of participants to unearth common themes rather than a case study approach, which would have produced a detailed description of the situation in the university, but not necessarily a theory on how to improve practices within the university. As it turned out I decided to use Drama Theory (Howard, 2009) to describe the best way to improve practices within the university. This was based on my discovery that through grounded theory a clearer picture of perceptions of technology use in education emerged, but this did not help in explaining how implementation could be improved.

3.6 Fit of Research Methodology with Research Problem and Questions

This problem could have been investigated through a number of methods. Quantitative methods could have been used to research this phenomenon, but this was discounted due to the unclear nature of what people regard as technology. It was also my hope to discover participants' underlying perceptions of technology, which necessitated in-depth interviews. Action research was another possibility, but I did not want to create a cyclical research style applying new ways of incorporating technology to see how this might change the use of technology, although this could be an interesting follow up investigation. I was interested in seeing what teacher and student perceptions of technology were at one point in time in order to consider how this situation has been created. Phenomenology may have fit this study, in particular the phenomenon of lack of digital uptake in education in one university could have been studied, but I felt that due to the vast variety of technology in education it might become a very large area of study, beyond the bounds of this research. Data could have been gathered through a questionnaire, but I felt that quantitative data would not yield the information I wanted. It is also very difficult to control the sample group, especially with anonymous questionnaires. Most respondents who choose to fill in the questionnaire are interested in the topic. In the case of education technology, it might mean that the respondents are all technology innovators, invalidating

the aims of my research, which was to investigate a variety of perceptions. In fact, when I did start interviewing participants many of them started by apologising to me and explaining that they didn't think they could help with my research as they did not use technology. An experiment could have been designed, but as each teacher teaches in different ways, it would be very difficult to design an experiment that would suit every teacher. Additionally, due to the different definitions of technology, interviews would have a much better chance of understanding perceptions. Due to all these factors, I felt the iterative nature of grounded theory coupled with the emergent theory fit my research questions best. It also appealed to me as a way of examining data as a detective would, trying to find the subconscious perceptions behind decisions made by participants. In many cases the participants stated that they had never thought about this topic before, yet they were making decisions on syllabi and lesson plans and whether or not to incorporate technology on a daily basis.

3.7 Grounded Theory

Grounded theory aims to produce a theory by collecting and analysing data from participants who share a similar concern that is situated in a particular context (Charmaz, 2014). This data can be collected through, qualitative, quantitative and mixed methods, although it is usually collected through qualitative methods. In this study through a series of intensive qualitative interviews a theory of perceptions of technology in education is generated through systematic analysis of participant statements and constant comparison between participants and within participant interviews. Grounded theory was chosen to find a theory to advise on technology use within my university. As the data was collected through intensive interviews the continuous comparison method of grounded theory ensures a systematic analysis of qualitative data (Charmaz, 2014).

3.7.1 History of grounded theory. Grounded Theory was initially developed by Glaser and Strauss (1967) as a way to systematically analyse data. Grounded theory can be traced back to the movement known as symbolic interactionism. This movement sought to bring together the ideas of

Psychologism, which is a view that social behaviour is explicable in genetic terms as logical, neurological processes; and Sociologism, which views social behaviour as being guided by societal norms. According to the theory of Symbolic Interactionism individuals interact with the world based on their will to act as well as following environmental clues as to how they are expected to behave (Goulding, 2002). Based on this theory, the researcher needs to enter the world of the participant in order to observe the participant's environment and to interpret the actions of the participant based on their environment and socialisation process. Although Symbolic Interactionism aimed to explain how researchers needed to view events there was very little definition of the systematic way in which this could be done. Glaser and Strauss (1967) sought to create this systematic procedure with grounded theory. The term 'grounded theory' came from the idea that research should be grounded in the behaviour, words and actions of those being studied. Glaser trained in Columbia University in the tradition of theorising, verification and quantitative methods. Strauss on the other hand trained at Chicago, which focused on the qualitative methods of observation and intensive interviewing. When the two came together they agreed on the need for researchers to get out into the field and to experience what the participants are experiencing in order to understand what is going on. They also agreed that theory must be grounded in reality and that the experience of the researcher and participant are continually evolving through participants actively shaping their own world as well as researchers constantly evaluating the data with the interrelationship between the meaning and action of participants.

Initially Glaser and Strauss worked together researching experiences of terminally ill patients. Grounded theory was constructed as a means of systematically collecting data with clear guidelines for the verification and validation of findings. Up to this point qualitative research had been regarded by many academics as subjective and unscientific (Goulding, 2002). Glaser and Straus countered this notion by proposing that qualitative analysis could have its own logic and particularly theoretical explanations of social processes could be constructed through following systematic analysis of data. Narratives and Case Study can also have their own logic especially when viewed over time, but within the framework of a large number of interviews each interview

may be subjective, but analysing them as a whole, Grounded Theory allows them to be viewed objectively. Logically conceived analytic codes followed by constant comparison helps researchers to control their research process and move qualitative inquiry beyond description and into explanatory theoretical frameworks (Charmaz, 2014). Glaser and Strauss's initial Grounded Theory legitimised qualitative research as a credible, rigorous and methodical approach.

The most important facet of grounded theory is that the theory should emerge from the data rather than the researcher having a preconceived idea of the theory, and try to test it by collecting data, as is usual in positivist notions of research. There should be a continual interplay between analysis and data collection. Bohm's definition of theory as 'theatre of the mind' (Angelos, 2010) describes theory as being a way of looking at something rather than a definition of something. In this way grounded theory offers a way to look at a large quantity of data and build a picture in our mind of what that thing may be.

In later years Glaser and Strauss started to disagree on the way in which grounded theory should be carried out. Straus developed a more linear approach to research methodology described in "Basics of Qualitative Research: Grounded Theory Procedures and Techniques" (Strauss & Corbin, 1990). Glaser criticised this new prescriptive methodology, but many researchers favoured it as offering a more structured method to analyse data. In the early 1990s a new style of grounded theory started to emerge – 'Constructivist Grounded Theory' (Charmaz, 2014). This method retains the comparative and emergent aspects of Glaser and Strauss's (1967) original statement whilst incorporating Corbin & Straus's (1990) structure for analysing data, but it also acknowledges what the researcher brings to the research and how the researcher's way of asking questions, way of interpreting the data and background knowledge may affect the findings. In the current study the researcher being a member of the university and having a close relationship with many of the participants enables an understanding of the answers given on a deeper level. Although initially Glaser and Strauss (1967) stated that researchers should remove themselves from the research, later researchers suggest that this knowledge of the situation can increase the reliability of the

data adding richness (Charmaz, 2014; Deady, 2011; Poggenpoel & Myburgh, 2003). Charmaz (2014) states that “I see the major versions of Grounded Theory as constituting a constellation of methods, rather than an array of different methods.” (Charmaz, 2014, p. 14). In the spirit of this description the current study has tried to incorporate what was most suitable from all types of grounded theory, with the researcher’s own attitudes to cross-cultural understanding in research. The way that data was analysed was adapted to utilize technology, so that the data could be coded, but also retain the original quote, keeping as close as possible to the raw data. This is explained in more detail in the data analysis section (p.37).

Personally, I was drawn to the concept of studying interview data searching for clues to find a theory. I like the idea of approaching the data with an open mind and trying to make sense of what has been said. It was time consuming, but the iterative process of looking at the data over and over again led to a much deeper understanding of the data and allowed a theory, that was not initially apparent, to emerge.

3.8 Grounded Theory and Cross-Cultural Research

In the case of this research some of the participants are Japanese nationals and some are non-Japanese nationals. Goulding (2002) states that there is some debate as to whether the researcher should conduct qualitative research if he or she does not share the same language. However, the English fluency of the Japanese nationals and my knowledge of Japanese as well as my depth of knowledge of Japanese culture allowed me to understand and compare the data from all the participants. Barnes’s (1996) main criticism of cross-cultural grounded theory was with translations and interpreters being used. In this case neither translations nor interpreters were used. Occasionally the data needs interpreting based on the sociological situation in Japan. Additionally, different cultures place different meanings on words (Moses and Knutsen 2012). In this way comparison is very difficult to use in research with participants from different cultural backgrounds. In the case of this research there was an obvious difference in the way that native Japanese speaking participants viewed their own technological ability, with three of the four native English speakers describing themselves as ‘Luddites’, whereas the

Japanese participants described themselves as variously; ‘conservative’, ‘old-fashioned’ and ‘a Showa person’. In Japan the Showa period from the end of the American occupation in 1952 until the death of the Emperor Hirohito in 1989 was a cultural heyday and very economically successful. Due to the current economic recession many Japanese people look back on this time nostalgically. Thus, describing oneself as ‘a Showa person’ may be a positive remark. Old fashioned and conservative can also be positive. On the other hand, describing oneself as a ‘Luddite’ is generally negative. The Luddites rejected all machinery and technology acting with violence.

3.9 Use of Literature in Grounded Theory

Whilst Glaser and Strauss (1967) urged researchers to approach data with a truly open mind, which was possible only by not carrying out a literature review until after the theory had emerged from the data, the concept of bracketing out theoretical preconceptions is very complex. What constitutes a theoretical preconception is not clear. Even a novice will have some preconceived ideas. Evans (2013) states that a key difference of Constructivist Grounded Theory is the timing of the literature review. In Constructivist Grounded Theory a literature review can be conducted before data collection to aid interview question development, and then another literature review can be carried out after data has been analysed to try to find comparisons of the findings with pre-existing data. The important distinction with a literature review in grounded theory is that there is no effort to prove a hypothesis through research. The theory should emerge from the data and subsequently be compared to other literature.

3.10 Comparison in Grounded Theory

The aim of comparison as used by constructivists is to understand rather than generalise (Moses & Knutsen, 2012). Constructivists employ comparisons to emphasise the similarities and differences between thick descriptions from intensive interviews, they do not use comparisons to uncover law-like generalities in the social world. In the case of this research at the most basic level it is very difficult to compare comments on technology use, as the definition of technology is different for different people. Jones

(2012) states that technology can be defined on three different levels; by the devices and software used, by the infrastructure that enables users to interact and network using technology, and also through the way that technology has affected society in general. Some people might describe the use of PowerPoint as using educational technology, but others feel that educational technology necessitates fully flipped classrooms with integrated technology. Additionally, people have different perceptions of other people's technology usage. Some people exaggerate their knowledge and use of technology, while others self-deprecate their knowledge and usage of technology, when they are actually using technology in advanced ways.

Other ways in which technology cannot be compared is regarding the definition of 'mobile learning'. One definition of mobile learning is related to the learner, so that if the learner can move with the material it is mobile learning, in which case carrying a book on the train might be described as mobile learning. It can also be related to the device, in that case a digital device is mobile in which case use of a mobile phone or tablet defines mobile learning.

3.11 Reliability and Validity

Reliability refers to the degree of consistency for findings over time and in different contexts. Validity and reliability are regarded as positivist concepts by many researchers and thus not a necessary goal in qualitative research, however Silverman (1994) states that if we reject the idea that the world is in infinite flux, then some stable properties in the social world might be found. Assuming that there are some stable properties it can be concluded that findings from one study might be replicated in other studies.

In this research reliability was sought through the constant comparison of the data. Rather than taking the evidence of one participant, themes were created based on repeated comments or sentiments. One of the initial aims of Grounded Theory was to create a methodical and systematic way for qualitative research to be analysed, whilst still retaining "the usual canons of good science" (Corbin & Strauss, 1990). In addition, reliability was also sought through comparison of attitudes of teachers and students. This constant comparison attempted to ensure that any theories were based on attitudes of

multiple participants rather than the idiosyncratic opinion of just one. Another way in which this research attempted to retain consistency was to retain the original data as long as possible in the spreadsheet rather than using the researcher's paraphrase or summary for the codes. It was felt that relying on paraphrased codes too early on would present the possibility of the meaning of the original quote being gradually changed over time.

Validity refers to "the extent to which an account accurately represents the social phenomena to which it refers." (Hamersley, 1990, p. 57). Some researchers have questioned whether qualitative research is ever valid, whereas others have tried to define a different type of validity in qualitative research (Onwuegbuzie & Leech, 2007). Cohen, Manion, & Morrison (2011) state that "Indeed validity is the touchstone of all types of educational research." (p.134). This means that all educational research, should have a goal of validity, but in qualitative research this usually means not assuming that your findings are necessarily a universal truth but accepting the possibility that there may be different influences, and that although you report your conclusions to the best of your knowledge, there may be other explanations for the findings. It is useful to consider how validity and reliability can be established in a relatively small-scale study such as this, to establish how this might be useful knowledge to discover, and how it might benefit the world beyond the researcher themself. Reliability should always be the goal of research, but as qualitative research is open to the subjectivity of the researcher, it needs to be held in mind at every stage of the research, from forming the research questions to analysing the findings. In this research the choice of participants coming from very similar environments with very similar job positions could increase the validity. In addition, the use of intensive interviews was deliberately chosen so that the researcher could establish what each participant defined as technology. In this case it is hoped that the findings will firstly inform my own institution on future investment in technology and curriculum design. Subsequently, readers may find the theories to be applicable to their own situations based on similarity of context. For this reason, a rich description of the context is necessary to enable comparison. Onwuegbuzie & Leech (2007) offer various suggestions to increase the legitimacy in qualitative research. Regarding internal credibility in this study,

the most important factors in increasing legitimacy are the reduction of observational and researcher bias. In the case of observational bias this may have come from including too few participants or not spending enough time on the interviews. All the interviews were allowed to run their course until the participants seemed to have nothing extra to add to the data. In the case of the number of participants ten may seem few, but in a total fulltime faculty of eighty-five, ten is a significant number, added to which nearly all members of the English department were interviewed. In the case of students, it might have been preferable to interview a wider variety of students at different stages of learning. This was impossible due to ethical considerations, but was considered in the analysis of data. An attempt to reduce researcher bias was made through having semi-structured interviews, but inevitably by asking questions pertaining to technology creates a Hawthorne effect in which participants feel that they should be using technology, and to embellish descriptions of their own technology use.

3.12 Generalizability in Qualitative Research

Although generalisability is difficult to establish, through a detailed description of the context and institution the reader can consider if it is applicable to their own context, and how this knowledge might be useful. It is hoped that through a thick description of the institution and participants on pages 16 and 17 readers can determine the extent to which the findings of this research might be applicable to their own environment. As stated earlier, generalizability has been criticised as inappropriate in qualitative research. Laws & McLeod (2004) state that the role of qualitative research is to understand one particular situation in depth, not to discover what is true of many. Bassey (1998) wrote that in qualitative research something he called 'Fuzzy Generalization' is possible. This proposal says that when similar cases are studied, it *may* be found that *x leads to* y. There is no statistical measurement for '*may'.* In this way 'fuzzy generalizations' indicate possibilities rather than attempting to predict an outcome. As this research is conducted through grounded theory, I hoped that a theory would emerge from the data, but I do not intend for this theory to be predictive of the future, rather to help to understand what is observed to be happening. Producing laws that

apply universally is not a goal of qualitative research, but studies from one situation can inform judgement in other situations. For this to be possible thick descriptions of the site and participants are essential for other researchers to judge the level of similarity. In the case of this research the results may be applicable to other small Japanese universities, but also the comments of the teachers and students may be something that an individual may recognise in themselves. The final analysis of technology implementation is also an area in which many institutions or departments might recognise their own style of implementation of technology as being top-down rather than bottom-up.

3.13 Research Design

When choosing the research design, I considered a number of methodologies and methods. Initially case study seemed to be a good fit with the research questions and especially the fact that the research was situated within one institution. However, I felt that although the interviews were conducted within one institution that this was not a study of that institution, I wanted it to be a wider investigation into technology in education using one institution to gather data. Due to this I decided to use semi-structured interviews of teachers and students and then to analyse these results with constructivist grounded theory. Charmaz (2014) states that intensive qualitative interviewing is a good fit with constructivist grounded theory due to the focus on the topic, whilst allowing the participants' views to emerge. The research is ethnographic to a degree as it is situated within a specific context at a specific time, but the overall aim was to try to find a new theory, which could be applied to my university rather than only investigating my university.

3.14 Research Methods Used for Collecting Data

Individual semi-structured interviews (see Appendix 1 for a table showing all interview questions) were used as they offered an opportunity to explore the participants' perceptions of technology, but also to encourage some reflection on the way that decisions regarding technology were taken. They also enabled me to explore what exactly the participants meant by 'technology' and follow up on interesting ideas. This provided rich data, which Maxwell (2013) says can provide a full and revealing picture of what is going

on. The reasons that participants choose or don't choose to use technology seem to be unclear to the participants themselves. Due to this, it is only through in-depth interviews that ideas and perceptions can be teased out of the participants. Survey data would only give superficial answers to these research questions.

The interviews were all conducted in English and lasted between 30 and 75 minutes. All the participants were given the choice to be interviewed by me in my private office or in another private place of their choice. All except two chose to be interviewed in my office and the other two were interviewed in their own offices. The interviews were audio recorded and transcribed by me shortly afterwards. The act of transcribing the interviews proved to be very useful as it reminded me what had been said and insights came to me whilst transcribing.

Although I can speak fluent Japanese, all interviews took place in English to avoid the danger of contamination, which can take place when data is translated (Barnes, 1996). Charmaz (2014) found in her research that researchers were better able to compare data in their native languages. Searching for similarities requires a depth of knowledge of the language and subtleties of the language. As the researcher's first language is English this is the most suitable language to use for the research. In cases when there are difficulties of comprehension due to language the meaning was negotiated between the researcher and the participant during the interview to ensure the best possible accuracy of data.

3.15 Sampling

The university has approximately two thousand students and eighty-five full-time faculty members. A group of ten teachers working within the same university holding similar tenured full-time positions were interviewed to investigate their usage of technology and perceptions towards technology and technology in education. There were four women and six men. Gender has been attributed as a considerable variable in explaining technology acceptance and as such it was important to have a balance of genders (Goswami & Dutta, 2016). Unfortunately, due to the gender imbalance in the faculty of this institution this was not completely possible. Six female students

at the same university were also interviewed just after graduation, to investigate their perceptions of technology and especially how it was used during their undergraduate years. The university is a women's university, which is also an interesting demographic to investigate, as various studies show differences in gender usage of technology, including how they use social media to the amount of time spent on technology (Goswami & Dutta, 2016). The perceptions of the students were compared to each other to judge how these perceptions differed, and what might cause the differences. The perceptions of students were also compared to teachers especially in situations where teachers made comments about students, to see if their perspective matched the students' reality.

Charmaz (2014) warns against convenience sampling in order to avoid selection bias. In this case although the participants were convenient, as they were all known personally to me, they were not chosen for this reason. They were chosen as representatives of a certain demographic of teachers, who have been underrepresented in educational technology research. Within the university there were a limited number of teachers with English skills sufficient to be interviewed in English and express their perceptions clearly. This resulted in the majority of the teachers in the English department being interviewed with a wide variety of experience of technology. In general, teachers who did not use technology did not want to be interviewed initially. It was precisely those people who are reticent to use technology that were interesting within this research. To the best of my ability all full-time tenured faculty with the English ability to be interviewed in English were included in this study. As the university is a Japanese one with very few foreign faculty and only a few Japanese faculty fluent in English this resulted in a total of only ten teachers. Despite the small sample number due to the similarity of environment and age, theoretical sampling was achieved. It would have been preferable to interview more teachers, but all possible participants were interviewed.

The students were chosen to represent another voice in this data. Recently graduated students were chosen for ethical reasons to avoid students who might be taught by me in the future, but also had an extensive knowledge of the university and program through four years of study. The

timing of interviewing these students was difficult to achieve, because many students move to other parts of the country after graduation. They were all interviewed within the same week after graduation. The students were recommended to me by the departmental staff as students with a high English ability and thus able to be interviewed in English rather than choosing students with an interest in technology. It was not possible to analyse the students' data in the same depth as the teacher's data due to their lack of English ability. Although they could all speak in English they did not have the linguistic sophistication or possibly maturity to give the same level of reflective and insightful comments as the teachers. For this reason, the findings and discussion of the student data is much shorter.

3.16 Ethical Issues

Conducting research within my own university could have various ethical problems. Blaxter, Hughes, and Tight (2006) note various disadvantages of researching in your work place, those most applicable to ethics are; pressure from your employer to reach the conclusions they want, problems with researching those you manage or are managed by and maintaining anonymity. In order to limit the risks to the participants and researcher the teachers were chosen who were all full-time tenured faculty over whom I have no power of employment, the students had all recently graduated, so I had no power over their grades. This was to lessen the opportunity for coercion of participants, or participants feeling threatened to give an answer to please the researcher. The interview questions were designed in an appreciative inquiry style, to make them less threatening to participants and the university administration. Despite the fairly non-controversial nature of the questions, some of the comments that were made during these interviews might be regarded as what Williams (2009, p.214) referred to as 'guilty knowledge'. This is knowledge that the researcher hears which may affect the way they view colleagues or other aspects of their work. Anonymity and confidentiality are difficult to guarantee, but to the best of my ability teachers and students were protected. This was done by identifying the teachers as 'Teacher 1' and students as 'Student 1' etc. Oliver (2010) recommends using fictional names to help the reader make a connection with the specific

respondents, however maintaining gender or ethnicity of fictional names would reduce the anonymity significantly. For this reason, the more impersonal identifiers were used although within a small university and due to the nature of some of the comments the identity of some of the interviewees could probably be deduced. In addition, using gender neutral pronouns ‘they’, ‘them’ and ‘their’ for teachers even when referring to one participant was employed to increase anonymity. This makes the writing a little ungrammatical but avoids constant use of ‘the teacher’. The students were all female and came from a much larger pool of possible participants, so were referred to with gender specific pronouns.

Oliver (2010) states that ethical issues can arise when the interviewer and interviewee are from different cultures, religious backgrounds, or genders. Although I do not feel there were issues of culture and gender between the interviewer and interviewees, there may have been an age factor. I was younger than all but one of the teacher participants. Some of the participants had the impression that being younger, or purely because I was doing this research, that I was very technologically advanced and that they needed to apologise for their lack of technical ability. Before the interviews took place, I explained to everyone that it was not an effort to encourage them to use technology and that whether or not they use technology they were very useful participants.

The students were newly graduated and did not have any obligation to me as a teacher, but I wondered if the euphoria of having just graduated had given them a slightly positive bias regarding their time at university and learning opportunities. As a full-time teacher at the university I was still a figure of authority and it is difficult to know if this affected the data collected. Again, I tried to approach the interview as appreciative inquiry in an attempt to avoid participants feeling disloyal to the institution or their teachers. The research project went through two ethics reviews, one in the site of the research and the other through University of Liverpool. The two processes were quite different. By going through both of these processes the research was slightly delayed, but each one focused on different aspects of the research. The site of the research was particularly focused on the participants, ensuring that the researcher had no significant power over any of

the participants. Both processes required anonymity and protection of data, which was guaranteed through password protected files, storage of hard copies of paperwork in a locked cabinet and names being removed at the time of transcription. All participants were given informed consent forms according to the University of Liverpool ethics committee and the ethics committee at the site of the study, one in English and one in Japanese. As the consent form was written in English and Japanese it was checked by Japanese speakers for accuracy.

3.17 Data Collection

Sources of data for the current project included interviews of ten teachers and six students from the English department of a private women's university in Japan. The interviews were all carried out over a period of two months. The interviews with the teachers were used to develop a theory of why teachers do not adopt technology in their classrooms, whether technology should be adopted in education and finally, if technology is to be adopted, how a university can support teachers to ensure the best learning outcomes for students. Interviews with the students were used to support or refute the opinions of teachers on what students' perceptions of digital technology are and most importantly whether the teachers and students really have the same opinions. One of the teachers is also the head of the office of academic affairs and they were asked about the university policies regarding digital technology as well as their own attitudes to technology.

The interview questions (see Appendix 1) were semi-open with an aim to gather data on similar themes, but open enough that the participants could express perceptions and experiences with technology freely. Most of the participants had some experience that they wanted to share, either when digital technology went wrong or when they had had a successful experience with digital technology. The interviews lasted between 30 and 75 minutes. The length of the interview often depended on the participant's English ability. Lower level English speakers were tired after 30 minutes, but fluent English speakers were able to talk for 60 minutes or more. All the interviews were conducted face to face. Choice of time and location was always left up to the participants. When I started this research, I wanted to investigate mobile

technology use, but as the data collection went on it became clear that most teachers and students could not separate their use of digital devices and other forms of digital technology. Questions related to ways in which the teachers were using technology in their classrooms. I also showed them some common applications used in educational technology to aid language learning. During this period, I tried to expand on areas when the teachers had problems and areas where the teachers seemed very enthusiastic about technology. I also tried to build on places where they mentioned technical support or lack of it. Subsequent questions were to try to find out if the teachers felt pressure to use technology either from the university administration, students, or the ministry of education. Many teachers referred to a project carried out in the university about seven years ago before I joined the university. Some teachers had strong feelings about this program, which was ultimately suspended. The final question focused on how they hoped to use technology in the future, and what capabilities they would like from technology. The number of questions were limited to allow for as much flexibility and input from the participants as possible.

3.17.1 Saturation of theoretical categories. Charmaz (2014) refers to saturation of theoretical categories as the time when you can stop gathering data as more data collection will not increase the properties already found. Glaser (2001) defined it in more detail as not seeing the same pattern over and over, but that even though there may be new patterns these do not reveal new properties. It is very difficult to know when to stop gathering data. In the case of this research I decided to re-interview two of the earliest participants regarding their perception of time and technology. As data emerged it was apparent that certain topics were of interest to a number of participants but this data had not been gathered in the earliest interviews. The follow-up interviews were quite short, focusing on additional data to add to the first interview. On the other hand, the category of pressure to use technology was saturated quite early on. It was obvious that none of the teachers felt pressure from the university to use technology although initially when the internal mail system was introduced some of the teachers had been worried that there might be pressure put on them. It is important to emphasise that saturation

was achieved early due to the similarity of context. In this case all of the participants came from the same university, so were dealing with the same university administration. It was not possible to increase the number of participant teachers as all tenured full-time teachers with sufficient English ability to engage in an intensive interview had been interviewed. It is probable that if the research were to be expanded you would need to investigate a large number of participants from many different universities to reach saturation on whether teachers feel pressure from university administrations. In the case of the students there was a similar limitation on the students, who were eligible under the ethics requirements of my university stating that I could not interview my current students or students who I might teach in the future. In addition, there are a very limited number of students, who have the English ability necessary for this type of intensive interview.

In deciding whether or not to re-interview participants the decision was based on whether it was necessary to find out if there was a similarity of opinion between two or more participants. As I was working in the same university, I had quick and easy access to all participants, who were willing to be re-interviewed. No participants left the university during the course of my analysis of data. The definition of theoretical saturation can be difficult to prove. Morse (1995) states that there are no clear guidelines or tests for when data saturation has occurred, however she emphasises the necessity to code all data, not only the data, which occurs frequently. This ensures richness of data in a qualitative study. Saturation is achieved more quickly with a cohesive group and when theoretical rather than random or snowball sampling is used. In this case the narrow context ensured this. Morse (1995) goes on to say that saturation has been reached when the data is rich and full and when the theory appears to make sense. I felt that saturation had been reached, although there is always the possibility that had I interviewed one more participant they would have provided extra data shedding more light on the theory.

3.18 Grounded Theory Data Analysis

In this research, the data was analysed in various stages. The first stage was the transcription, the second stage was the highlighting of broad themes,

the third stage involved organizing themes in spreadsheets, the fourth stage was the writing of memos, subsequently using the 'find' capability within the word-processing software to search for specific words, and the final stage was the rereading of all transcripts to find more detail for each category within each theme.

Stage 1 Interviewing:

All interviews were recorded on an audio recorder. As the interviews were conducted in a private space this allowed for very clear sound quality. All interviews were transcribed by the researcher. Although it was time-consuming, this had a threefold benefit. Firstly, as I had been there at the time of the interview and the interview was transcribed shortly after the interview there was a strong degree of accuracy ensuring descriptive validity of the data. Additionally, as I transcribed the data I re-listened to the participants and was able to pick up on tone of voice emphasizing certain points more strongly. It was especially useful to note when participants became excited or agitated. Finally, I was able to highlight and note interesting themes in the transcript as I went along. This proved very useful in the next stage of analysis.

Stage 2 Initial Coding

As the interviews were transcribed and after they were transcribed, broad themes were highlighted. Initially this was very difficult, so the first two codes I identified were negative and positive comments on technology. Each comment that was thought to be a negative comment about technology was highlighted in one colour. The two interviews were then analysed to see if there were any other broad themes. The lack of technical support was mentioned a number of times in both of the first two interviews, so this became another code that was highlighted in a different colour on the transcript. The iterative process of grounded theory allows for the previous interviews to inform the subsequent interviews. Although I had a clear set of interview questions the semi-open nature of the interviews allowed me to follow-up on comments in the interview that I thought might pertain to themes identified in previous interviews. With each new interview transcript, a new theme might emerge. In this case the previous transcripts were then re-

examined to try to identify similar comments. In this way all the interview transcripts were read numerous times, so it was often possible to recall from memory a previous comment that might be similar. The search function within the document was also used to search for similarities.

Once all the transcripts had been initially analysed they were almost entirely highlighted in different colours indicating the different themes, which became the initial codes. Each code was transferred to a separate spreadsheet, with one column for each teacher and every comment relating to that code was in a different cell. This way of coding allowed the original data to be retained for as long as possible. I wanted to avoid a gradual changing of the data due to my interpretation for as long as possible to increase the reliability of the data.

Stage 3 Focused Codes

After all the data had been transferred into the spreadsheets, the rows were sorted into similar ideas, which became the focused codes. Each teacher had one column and each focused code was a separate row. The codes could then be compared across the spreadsheet. Once the codes had been developed, the transcripts were re-examined to look for reference to similar ideas. This was sometimes fairly simple; for example, searching for words and synonyms, but sometimes the idea had been implied without being explicitly stated. This is the reason that I did not want to use software such as NVivo (QSR International, n.d.) because I felt it would not pick up on the subtle implications that I might understand, and additionally it would not have the cultural sensitivity to compare comments by Japanese and non-Japanese participants. Sometimes quotes would go into more than one spreadsheet if it related to more than one code.

The teachers' codes were;

1. Negative perceptions of technology.
2. Positive enthusiasm for technology.
3. Technical support or lack of it.
4. Teacher perceptions of students using technology.
5. Pressure put on teachers to use technology.
6. Technical problems encountered.
7. Future ideas on technology.

After analysing the data, I realised that ‘time wasted’ or ‘personal time invaded by technology’ was another very interesting theme and this was added at a later stage.

The student data was separated into eleven themes;

1. The students’ private use of mobile phones.
2. Whether and how students used mobile phones for study.
3. Whether they considered themselves addicted to their phones.
4. Their perceptions of teachers using digital technology in the classroom.
5. Their perceptions of teachers asking them to use their mobile phone in or out of the classroom.
6. Their perceptions of using data on their private phone for university study.
8. What they would like to be provided by the university.
9. Problems they have had using their own devices for study.
10. Disadvantages of using digital technology in education.
11. How they imagine or would like the future of technology to be.

Although the student data was less than the teachers, due to the limited English ability of the participants they could not explain in the same depth about their feelings. Due to this, the number of themes are greater, but possibly not as well developed as the teacher themes.

After examining the themes for common ideas between students, I was then looking for specific data to compare with teachers’ data. The aim was to support or refute claims that teachers might have made regarding student perceptions, and additionally to explain how digital technology is being used differently from the teachers’ and students’ points of view. The student data was divided into more codes than the teachers mainly because the students did not go into as much detail about their attitudes, so it was difficult to find deeper more common themes.

Stage 4 Memos

Charmaz (2014) states that the writing of analytic notes, commonly called 'memos' serve a central role in grounded theory to build theoretical categories and gradually develop the theory. In my case I found writing memos to be very useful. Whenever an idea occurred to me I would either add to an existing memo or start a new memo. These memos were organised in codes, which enabled me to compare the data across various codes and themes more easily than by looking at the spreadsheets, which were so large.

When I wrote the memos, I based the ideas on the quoted data from the transcript, but I also added various thoughts, which occurred to me whilst reading and writing. As one of the researchers quoted by Charmaz (2014) says, "You should keep coming back to the quotes that won't leave you alone." (p.194). This was the case with me regarding 'time'. Some teachers mentioned being contacted by students at the weekend and students expecting an immediate response. It was through writing the memos that I realised that this was connected to the blurring of the work-life balance. Additionally, other comments about using Social Network Systems were connected to time and students encroaching on teachers' private space. After writing memos I then went back to the transcripts again to look for similar comments, which might be connected to the codes. Through this iterative process I gradually built a picture in my mind of the theory which was emerging.

One of the early aims of grounded theory was to make qualitative research more analytical, enabling qualitative studies to move beyond descriptive studies into explanatory theoretical frameworks (Charmaz, 2014). Although I adapted grounded theory to fit my research, I believe that through following this system of codes and themes with constant comparison, I was able to analyse the interview data in far more depth than if I had pursued a purely narrative style of research.

3.18.1 Student data. The data from students was always intended as secondary data to support or refute ideas that emerged from the teachers' data. The student data was much smaller than the teachers' data due to the lower English ability of many of the students. The students' lack of maturity

and limited English ability made their interviews less insightful than the teachers. The questions asked were a little different for students than teachers; focusing on the students' perceptions of teachers using technology in the classroom and also their perceptions of being asked to use digital technology for study outside the classroom. The student data was recorded and transcribed in the same way as the teachers' data. I then made a new spreadsheet with all the student data.

Chapter 4: Research Findings

4.1 Introduction to Findings

In this chapter findings from the research project are shared, these include data from in-depth interviews with a group of teachers and a group of students. The next section of this chapter will provide an in-depth examination of the constructs that inform the emergent theory. The section begins with 'Negative Perceptions Towards Technology." This describes all the negative comments about technology that came out in the interviews and an attempt to analyse the root cause of these perceptions. Following this is a description of "Positive Perceptions Towards Technology." In which all the positive comments about technology are examined and analysed. The comparison of these perceptions is central to the theory. The third section on "Technical Support" relates to how the negative perceptions can become positive through good technical support and training. The final section describes the pressure to use technology felt by teachers, the origin of this pressure, and whether it is real or perceived.

4.2 Negative Perceptions of Technology

> They say that if you are going to be on TV don't work with animals or children because they always do unpredictable things. Well, it's the same with a classroom, AV equipment always surprises you or has the potential to surprise you. (Teacher 4).

All teachers expressed a variety of positive and negative perceptions towards technology. In analysing this data there were some clearly negative perceptions towards technology. This is to be expected as I am attempting to

investigate why technology is not used to a greater degree and negative perceptions of technology would seem to be a large reason that teachers would not use it in the classroom.

The first interview question related to the teachers' use of technology outside the classroom. It seems that negative perceptions of technology in private time would be a clear indication of reluctance to use it in the classroom. In many ways practicing technology use in private time provides the confidence to use technology in the classroom. In this study four out of the ten teachers were using old fashioned flip phones. Surprisingly, between 2010 and 2013 each of those teachers was given an Apple iPhone by the university for a mobile learning project, but after the project was finished four of the teachers returned the iPhones and bought old fashioned flip phones. This is a strong indication that teachers are either unwilling to engage with new technology or that there was a problem with those devices. One of the teachers admitted that they did not like engaging with technology.

> I don't have a smart phone, just what Japanese people call Galapagos[1] phone. I am a rather old-fashioned person. I try to keep a distance from technology because you use so much time, and as I told you I am a really an analogue person[2], so I try to do it as little as possible. (Teacher 8).

Referring to themselves as an old-fashioned person is a form of self-deprecation, possibly indicating that the teacher wants to be protected from an outside attack from someone else calling them old fashioned.

4.2.1 Teachers' fears of losing control. A number of teachers referred to technology encroaching on their private time. One of the teachers expressed reluctance to use the phone due to wanting to keep control over their time.

[1] This is a nickname for old fashioned flip phones, referring to the Galapagos Island that remained isolated and unchanged by the outside world for thousands of years.
[2] This seems to be the opposite of a digital or technologically advanced person.

> Young people and even middle-aged people think that the mobile phone is a normal form of communication and they keep phoning on it and I sort of think of it as an emergency contact, so I don't want people using it. I don't mind talking on my phone at home as I have a bit of control over that. (Teacher 7).

Teachers also referred to the way in which technology makes teachers available to students twenty-four hours a day seven days a week. Students are also used to instantaneous responses and expect it from their teachers. One teacher comments that once they have read the message they cannot forget it until they go to work, which causes a lot of stress. In this way the teacher is not actually being controlled by the student, but perhaps the teachers feel that the balance of power has shifted with the teachers no longer being able to control when they can and cannot be contacted.

> I think they want us to respond on the spot. They are so used to simultaneous thing with Social Network Systems, they are not used to email they are used to a newer system where they can get a response very quickly. Once you've read the mail from students, this thing stays in your mind even if it's on the weekend when you're having fun this thing still stays maybe you have to respond sooner or can it wait until Monday, this thing is really not good for anyone. (Teacher 6).

> They seem to be contacting more on Facebook and line than on Gmail so perhaps they are more familiar with that, it's more normalized for them and oddly enough they seem to expect a quick response and get upset if you don't do it. (Teacher 3).

Other teachers referred to the danger of social network systems, such as Facebook blurring the line between teacher and student. One of the teachers stated that they refused to accept students as friends or join their networks.

> I do worry about students seeing my private life through social networks. I don’t trust the social network algorithm, it might introduce my friends to my students. (Teacher 10).

On the other hand, another teacher is using Facebook to manage their classes, but expresses concern over ethical issues with students seeing his private life. They want to show themself as a real person engaging in society but is concerned if his political views should be shared with students, they do not have

control over what students see in his social network system. It could be said that the social media software has in some ways taken power away from people, by not allowing them to control their own data. As we have seen from recent scandals with social media sites selling data, they have the power to use members' data without informing them (Griffin, 2018).

> With Facebook, particularly there is a huge ethics issue, I should know more about what the university has in terms of policy regarding this. I set my Facebook up with everything on there, contacts and everything. Other teachers have separate accounts for students. And this is perhaps something I should be thinking of, but my own attitude is that it is more real in some way and that students can see you engaging with newspapers and students can see teachers engaging in politics. (Teacher 3).

These comments seem to indicate that the teachers are all engaged in digital technology in many ways, but there is a desire to keep technology in its place, and keep control over their own lives. All of these teachers were using iPads and computers in their private lives. Teacher 2 said that they found it difficult to use a learning application because they were not used to mobile phones, and they did not like the system. They said that they were sure that the system would not work well. They do not like mobile phones and did not think that the classroom would be energised by using them. When asked if they became more confident using the technology over the four years of the mobile learning project the teacher said that they did not become more confident and was happy when the project ended. They went back to using a flip phone. They were obviously uncomfortable with being forced to use the technology.

> But the department decided to introduce the system, so I had to have an iPhone and use the iPhones, so I was not satisfied. (Teacher 2).

This dissatisfaction on the use of mobile technology seems to stem partly from the program being forced on the teacher and partly on the teacher's lack of skill using Smartphones. This also seems to indicate a dissatisfaction with the lack of control with teachers being forced to use mobile technology without being consulted. Later in the interview the teacher stated that from the current

year they wanted to start using technology in all classes. The teacher did not indicate whether this was using computers or Smart Phones, but it seems to indicate that the teacher's negative perceptions of technology were due to having the program forced on them, and doubts as to the suitability of the program rather than a fundamental dislike of technology. This could also be connected to teachers feeling out of control. In one sense teachers want to control their students and in another they don't want to be controlled by higher authorities. Both of these feelings were apparent in the data. One teacher stated that they only allowed students to access research on the Cinii website. They did not want them to access blogs or other unreviewed articles. This may be a way for the teacher to help students find good quality references, but it is controlling their use of the internet rather than developing their skills to use internet resources correctly. Although no teachers stated that they were prevented from accessing certain sites by the university, some expressed dissatisfaction that they were encouraged to use the university learning management system over Google Docs, which they considered to be a better way of communicating with students.

In conclusion, a number of the teachers were quite old-fashioned even in their private use of mobile technology. The teachers also do not like students using mobile phones in the classroom despite other teachers stating that they have never or rarely seen students misusing their phones. A number of teachers also seemed to feel that digital technology and specifically mobile phones were blurring the line between work and private time. There was a lot of concern over students being able to contact them outside work time and even see aspects of their private life. The feeling of control, or lack of it, was the most important theme to emerge from this data. In general teachers did not like being told to use specific technology in their classroom. The teachers wanted to be able to control which technology they used in the classroom and in other areas of their working life, they wanted to control how students were using technology, and how and when they could be contacted.

4.2.2 Doubts on the effectiveness of technology and teachers' abilities. Five of the teachers expressed doubts on the effectiveness of using technology in the classroom or for teaching English. About six years ago a

new project was started at the university. Every incoming student was given an Apple iPhone and a unique application was created for the university. The native English speakers were asked to create audio material to upload into the application. All the teachers were then supposed to encourage students to listen to the audio material and also use the application for communication. A number of the teachers focused their comments on technology on this system. Teacher 2 said that they knew the system would not work. This seems to have been a gut reaction based on many years of teaching experience. The teacher stated that students prefer talking to a teacher than a computer. Another teacher stated that they thought that the technology was introduced before the infrastructure was ready. For example, the Wi-Fi was new and not powerful enough if all students are using Wi-Fi in a classroom.

> I was half excited, half apprehensive. Apprehension was because of lack of readiness of the faculty. I was personally excited to try something new. (Teacher 10).

They mentioned two reasons for apprehension, firstly lack of preparation of the university facilities and secondly lack of preparation of the faculty. Another teacher stated that the project was introduced in a hurry to try to be ahead of other schools as an advertising ploy. Universities need to keep up with their rivals, but as soon as they get the latest technology, another university will have better technology and they need to spend more money to be at the cutting edge. In this way technology is possibly being introduced in a hurry without proper preparation of infrastructure or faculty.

Many of the teachers spoke of their own lack of ability. In the ten teachers, three of them called themselves Luddites. The modern definition of a Luddite is “a person opposed to increased industrialization or new technology” (Oxford Dictionaries, 2017). Another teacher referred to themself throughout the interview as ‘old-fashioned’, ‘an analogue person’ and also a ‘showa person’, which means that they identify with an era in Japan that lasted between 1926 when the emperor Hirohito took the throne until he died in 1989. Teacher 5 teaches computer classes, but describes themself as half innovator and half Luddite and stated that technology was sometimes ‘too much’. Another teacher called themself ‘backward’ in terms of technology use.

All of these derogatory expressions indicate a lack of confidence in using digital technology or wanting to appear less confident at using technology than they really are. This would indicate that these expressions of lack of knowledge of technology are ways to avoid being accused of not using technology enough or using technology incorrectly. All of the teachers who were interviewed used computers regularly in the workplace to communicate and to prepare materials. One of the teachers refused to use the university internal mail system, but the teacher stated that was because most of the communication was in Japanese and they did not feel they could understand it. None of the teachers stated any inability to use a computer outside the classroom. Of the five teachers who referred to themselves as Luddites or old fashioned, all of them possessed more than one computer, four of them possessed iPads and two of them teach computer classes. It appears that the teachers are anything but Luddites, however they feel some sort of threat from which they need protecting. The threat could be the institution putting pressure on teachers to use technology, it could be pressure from the students, or a somewhat imagined pressure from society in general. None of the teachers expressed a clear pressure to use technology, but obviously felt some sort of inferiority complex for not using technology more. Some of the teachers stated that they did not want to use technology in the classroom due to their own lack of ability.

> What I find is my inability of efficiency, or should I say my paucity of knowledge. I always feel that I could have done better, but I don't know how. I am not very confident about my technological skills. (Teacher 9).

What is interesting is that this teacher uses technology extensively in their private life. The teacher was also using technology quite progressively setting students out of classroom tasks - watching YouTube videos and transcribing them, in the form of a flipped classroom. Possibly what the teacher refers to is the teacher’s lack of knowledge of some new types of technology or else the teacher’s perception of what other people are doing with technology and how much teachers should know.

Teacher 8 spoke repeatedly about how they were old fashioned and lacked technical expertise using computers and sometimes felt left behind, but they then said how much they wanted to learn from other teachers who had this expertise. The teacher also commented that some other teachers are very proficient at using technology and seem to take it for granted that other people are computer specialists too. They stated a desire to learn about new technology very strongly. Some of these teachers want to use technology, but just don't know what to do and how to do it.

In conclusion, many teachers referred to themselves in a variety of ways, from 'Luddite', to old-fashioned and backward. It is unclear why teachers are referring to themselves in this way as all of the teachers owned a variety of phones, tablet computers, laptop computers and desk top computers. In addition, every teacher interviewed was using technology in the classroom to some degree. There was no one who had rejected technology completely, and a number of the teachers strongly expressed a desire to learn more about technology. It is possible that teachers refer to themselves in this way to protect themselves from criticism of not using technology enough. It seems to be a recurring theme that teachers say they are not using much technology when in fact they are. This seems to be based on an impression of how much technology other people are using. Additionally, the impossible task of keeping up with technology as it changes so quickly, makes teachers feel that they are lacking expertise. Many of the teachers were involved in a mobile learning project that they were forced to use a number of years ago. Almost all of the teachers were negative about this project for various reasons. Some of the teachers felt that the preparation was not sufficient for the project to be successful, other teachers felt that their workload had been unreasonably increased, but the underlying problem seemed to be that this was implemented in a top-down fashion without enough discussion and negotiation with the other teachers. One of the teachers commented that this was in order to implement the program before other universities, which is often necessary due to the rapidly changing pace of technology and a desire by institutions to be up to date. The teachers felt out of control as to when the technology would be introduced and how the technology should be used.

4.2.3 Difficulty of using classroom equipment. A number of the teachers commented on uncomfortable experiences when the equipment does not work. One of the teachers referred to how difficult the equipment is to use.

> Some of the rooms it seems really fiddly to connect which is really, really annoying it's a bit fiddly really, time between classes I really want to be relaxed and set up really, really quickly and this is not always possible. (Teacher 3).

There is obviously a lot of frustration expressed by the continual repetition of the adverb, 'really'. Another teacher refers to the classroom equipment as not being well maintained, which causes difficulties.

> Sometimes the DVD player just won't come up on the screen I think the machines are not very well maintained and the batteries run out on the remotes and you have to stand in exactly the right position and if you don't press it in the right way it won't work. (Teacher 7).

Another teacher also commented that the buttons on the remote control were too small and they cannot use it. The electronic whiteboard seems to cause numerous problems. One of the most enthusiastic technology users commented on difficulties with the electronic whiteboard.

> I have to use that whiteboard which I sometimes don't like. It's a bit cumbersome. It takes time to start and sometimes it doesn't work. (Teacher 1).

The operating language of the computers was a problem for all of the non-Japanese teachers. Even though some of them are very fluent at Japanese having to try to solve technical issues in a Japanese operating system seems to cause extra problems.

> I don't like to be reliant on technology in the classroom because it goes wrong and particularly here with all the instructions being in Japanese I sometimes don't know how to fix it……With it being in Japanese it makes me more reluctant to use it. (Teacher 6).

This sentiment is backed up by another teacher, who states that they did not feel comfortable using the computers as the students don't seem to know how to use them and the teacher has difficulty helping when the operating system is in Japanese. One of the other teachers says that there is an extra difficulty in using technology for non-Japanese staff.

> It's particularly difficult if you are a native speaker of English and not Japanese it's already difficult to communicate and it's an extra hurdle. And therefore, an extra reluctance to go down that path you know. (Teacher 4).

> I'm in a lab and it's all in Japanese and the software is different and the version is different and we spend the class reinstalling software instead of anything useful. (Teacher 5).

Although it is possibly a relatively small number of teachers, who are trying to use computers in a foreign language, with increased international mobility of academics it should not be under-estimated. Additionally, lack of language competence is something most academics are reluctant to admit. Just as switching operating systems or versions can be difficult, so can changing languages. Most professionals can work with their own computers using the operating system and software with which they are most comfortable. As a teacher, you are often required to be proficient at multiple systems. Even within one university different classrooms often have different operating systems. This is quite unique to universities as most teachers of school age students will have their own classroom, they will learn the quirks of their equipment. Few university teachers have much power over the operating system they will have to use in the classroom. This is also sometimes suddenly changed and software that had worked smoothly previously, suddenly will not work.

In conclusion, many of the teachers have difficulty with using the technology in the classrooms. This is probably due to teachers having to teach in a variety of different classrooms with a variety of different equipment. In most work situations workers only need to deal with a limited number of computers, but within a university there are often numerous computers with different operating systems and different versions of software as well as

different methods of connection to other equipment. This difficulty might be overlooked when universities invest in equipment. Another problem for all the non-native Japanese speakers was the operating language on the computers. This was cited by every non-Japanese teacher as a reason that they had difficulty using the technology and were reluctant to use it. On the other hand, the computers in their offices and homes were using an operating system with which they were familiar, in their native language.

4.2.4 Unreliability of equipment or software. A number of teachers stated that they don't want to appear to be incompetent in front of students. They stated that in order to appear competent at using the equipment they would spend extra time preparing lessons, often visiting the classroom on the previous day or during the lunch break to ensure that everything is set up. One teacher said that they made an extra lesson plan for lessons which relied heavily on digital technology just in case it didn't work and that they wanted to be calm before a class.

> Honestly, I knew that I have to do it, but I wasn't efficient enough to use it freely at my free will and I didn't want to totter, I didn't want to dither. Not be competent in the class in front of the students. (Teacher 9).

> If you are rushing around trying to connect clicking all these buttons to get the right screen up it's not good for yourself, to be relaxed for class and I think it's a bad impression for students to see this teacher with smoke coming out of their ears running around at the front. (Teacher 3).

That teachers are going to the effort to make extra lesson plans and visit classes in advance is an indication that they feel some pressure to avoid things going wrong, to prove to students that they know how to use technology. Although a number of teachers stated that they were happy to ask students to help them and were not afraid to admit they did not know how to use the technology. It seems that this usually occurs when something unexpected happens, but in general teachers still want to retain a level of professionalism showing students that they are competent. They are also aware of limited classroom time, and do not want to waste time in the class

fixing technical problems. The relationship between students and teachers especially at a university level is a delicate balance between being friendly and retaining a hierarchy in which the students respect the teacher's level of knowledge. The teachers seem to feel that lack of technical ability could dent their level of respect, even if they are still very pedagogically competent and knowledgeable in their content area. Although it seems to be a high bar to set for teachers to have to be good at all these aspects of their jobs, it may explain why teachers are unwilling to display their lack of technological expertise in front of students.

In conclusion, teachers want to display their competence in front of students. Lack of technological knowledge might be regarded by students as lack of teaching competence. Due to this, teachers spent extra time preparing classes involving technology, often visiting the classroom in advance to test the equipment and making a backup plan in case the technology does not work. This can cause a lot of extra work for teachers and in turn discourage them from using technology. Not being able to rely on technology in the classroom is also an aspect of control. The teachers want to control their own classrooms and do not want to be reliant on technology.

4.2.5 Mistrust of technology. A number of teachers expressed a lack of trust in technology to protect their data. One of the teachers explained that they deliberately kept a paper diary as they do not want to keep all their addresses, phone numbers and diary in their smart phone in case the data is lost.

> I have this thing where I don't want to rely on my phone too much, so I know if I use my phone as my schedule book it will be easier, but I always have this fear if I lose my phone I have lost everything and then I will be nobody. And then I'll die alone kind of thing. So now I deliberately try to use this paper-based diary and I know it doesn't make sense if I think about efficiency. But there is something in me that I don't want to rely on one tool for everything in my life. (Teacher 1).

Another teacher says that they worry that keeping all their grades in an application on their iPad would be dangerous as if it crashes everything will be lost. Additionally, one of the teachers recounted a feeling from twenty years ago of the fear of pressing the wrong button and deleting all of your data. In

reality, these feelings are quite irrational. If you lose your diary or a piece of paper the data is lost, but the majority, if not all, learning management systems and computer files are backed up through cloud data back-up and other automatic back-up systems in various places. There are of course still problems with learning management systems, but on the whole, they are much safer than a paper-based system. It would appear that there is a type of irrational fear of technological data systems among these teachers.

> It was a bit frightening at first, what if you press this, will it disappear? I suspect some people older than me may well have had some resistance. It was something that we had to consciously make an effort to adopt, it was a bit worrying. But it was fairly easy to learn actually. (Teacher 4).

This may be because when they started using technology data could be lost much more easily, they may even have bad memories of having lost data. No one mentioned the fear of data being hacked or stolen, which is a danger of digital data storage.

In conclusion, these seem to be irrational fears. There is more danger of losing a paper diary or piece of paper than losing all the data on your computer. This fear seems to be a relic of the early days of computing when data was not automatically saved and could be deleted with the push of a button. It is hard to say that this is not a generational issue. None of the students expressed any fear of losing data.

4.3 Positive Perceptions Towards Technology

All of the teachers stated positive perceptions of technology in some situations, even though they had reservations in other situations. One of the strongest requests from the teachers was that they wanted to learn more about technology, indicating that even though some of the teachers who referred to themselves as ‘Luddites’, and ‘old-fashioned’ in terms of technology, are interested in learning more about technology if given the opportunity. This section has been divided into four main opinions. The first is connected to technology assisting teachers, the second is related to technology empowering students with skills they might find intimidating, or

that they need as life skills, the third is that teachers want to learn new skills, and finally technology promoting new learning styles such as, social constructivist styles of learning, and content-based language learning.

4.3.1 Technology assisting teachers. A number of teachers stated that technology could save time. It has been the hope of technology from the beginning that automation would bring about efficiency and save time. The first way in which technology saves time is through materials development. One of the teachers recalled when they first started teaching using a typewriter and having to re-write the whole document when you wanted to make changes. They also said that it was difficult to keep track of all the paperwork. Nowadays teachers can keep a huge data base of materials, which can easily be recycled.

> Long long ago, lesson materials were actually typed OK and I had an electric typewriter and there was limited or no memory therefore when you come to update the material you have to do the whole thing again. (Teacher 4).

This timesaving aspect of technology has been forgotten by most teachers. On the other hand, three of the teachers commented on how time consuming it could be to find good material online, even though they all said that they did not begrudge this time as the lesson would be more interesting and valuable for students, added to which the material can be reused.

> YouTube is a wonderful resource, but I have to go and find a suitable talk and that takes time, but it's worth doing it because it's so good. and once it's done it's done and can be used over and over again. (Teacher 9).

Again, the teacher comments on the fact that material can be recycled, making the production of material time effective. The teacher also commented on how wonderful ‘TED Talks’ were and that they enjoyed watching them, indicating that the preparation of material was time consuming, but also pleasurable. In this way, the technology is not only saving time, but also making better quality materials, which makes the lessons more enjoyable for students to learn and teachers to teach. It is also very easy to search for and access resources with

modern search engines. In the past finding audio-visual material would be dependent on the teacher's own experience or recommendations, now it is very quick and easy to search for audio-visual material on almost any topic. Although some teachers stated that it can be time-consuming to search for resources, in the past it was so difficult that most teachers did not even try. In addition, the abundance of resources available now has made the task of finding the best resources seem time consuming, but in reality, it is that the choice and quality is increasing.

Recording and practicing is another area in which students benefit from using technology. In the past, the teacher said making a video recording was quite time consuming, but now students can be asked to quickly make a recording then practice over and over again. This teacher noted that the technology does not change the way she is teaching, she is using technology to make an old-fashioned learning style more interesting.

> I'm using technology in a new era, but the learning theory I am adopting is practice, practice, practice. Mobile technology and technology doesn't make everything new so I just find if something works I have to incorporate it, if it is too much work then I don't want to. (Teacher 1).

This indicates that by using technology teaching and learning becomes more active.

Finally, one of the teachers stated that the phone is useful to contact students outside class. Given that many university teachers only meet students once a week having a way to communicate between lessons is very useful. Only one student commented that they appreciated teachers contacting them outside classes.

> I have to type my thesis on the computer. I never had any trouble. I sent email to the teacher he checked it and gave me advice on my thesis and sent it back to me. (Student 2).

This contrasts with comments made by teachers who complained that technology had enabled students to contact teachers outside work time. Students did not comment on communicating with teachers outside class, but

this may be because it is very natural for them or may be because these students did not need to contact their teachers.

In conclusion, technology has numerous benefits for teachers saving time and enabling them to introduce more interesting and up to date material to students. This in turn also makes the lessons interesting for teachers, who enjoy looking for new teaching material. It also allows teachers to give feedback to students between lessons, but it can be time consuming and encroach on their private time. Despite these problems the teachers wanted to use technology as it created much better lessons for students and was viewed as time efficient in the long run.

4.3.2 Usefulness to students. One teacher stated that using Google docs enabled them to give feedback to students much more quickly. In the past, they would sometimes give feedback, but the student would hand it in again without making any changes. With Google Docs, you can see the history of changes and know if you have already given advice. The teacher was negative about most types of technology, but this was one of the few things that they wanted to use. When asked why they wanted to use this technology the teacher stated that they learned how to use it because they could see its usefulness.

> Google Docs has application after they graduate whereas Manaba[3] is something they can really only use on campus. or while they're a student, so in a way, for a lifelong skill it's better to teach them something they can use after they graduate, for that reason I feel google docs is more useful. It's a more effective form of communication rather than them sending me an attachment and me sending it back. I'm not reluctant to learn things, I feel quite excited when it's something that can benefit everyone. (Teacher 7).

In this case the teacher states that they do not wish to learn to use the in-house Learning Management System as it is not useful for students in the future, on the other hand Google Docs makes their life easier and is a life skill, so they are more inclined to use it.

[3] Manaba is the university in-house learning management system.

> I'm big on google drive for various reasons. For writing classes google drive is fantastic, it is a life skill when they are starting work to be able to use those things, automatic saving, really helpful for them as they develop as workers in society. It's really easy to use and the students are so happy to be using it. (Teacher 3).

This teacher is also very enthusiastic about Google Docs. For its usefulness for students and how it will help students in the future. Unfortunately, one of the students complained about the teacher telling her to use Google Docs.

> I used Google Docs but I didn't know the computer couldn't use Google docs to print it out so I chose to use just word. And I didn't know it was going to change the font, so I had to change and fix everything it made me crazy. I just used Google docs because the teacher told me but, in the end, I thought I should have just used Word, because I had to fix everything. (Student 3).

In this case the teacher and student had a different perceived ease of use. The student was also dissatisfied about the lack of control she had over the software she could use. The student did go on to say that she once saved something on a university computer and it was erased overnight, so in that case Google docs would have been more useful. Although Google Docs was regarded as more useful by two teachers, there are valid reasons that the university wants teachers to use the in-house learning management system. These reasons relate to privacy and reliability of having a system that all faculty and students have password access to. The university has not stipulated that teachers should not use other software such as Google Docs. A number of teachers complained about needing to learn too many types of software and learning management systems.

> I mean the students do come up to you ask, "Why can't I contact you on 'Line'[4]?" I've already tried 3 of these and I'm just, I can't do a new one every year. (Teacher 5).

The teacher is referring to the constant introduction of new software and stating that they do not want to keep learning new software and applications. Although the teacher has learned some new software they are tired of constantly learning

[4] This is a very popular social network system in Japan.

something new. This may be an indication of the teacher's concept of technology as something fixed and learnable rather than an ever-changing concept, which can never be fully learned. Within this research some of the teachers stated clearly that they wanted to learn new ideas and especially about new technology from other teachers and from other students.

Teachers also saw technology as a good way to encourage students to study up to date material. One of the teachers commented that textbooks were "dead on the paper, but YouTube is alive" (Teacher 9). This refers to the fact that material from the internet is not only up to date, but it is also authentic, meaning that it was not created purely for students, which often happens in textbooks. Students often have difficulty making the transition from simplified textbook material to authentic real-world material.

Technology also offered opportunities for live interaction. This might mean communicating through online forums, but also many types of English language software offered opportunities for automatic evaluation and correction. When using English learning software, one teacher commented that "Computers are infinitely patient, but dumb." (Teacher 5). This seems to refer to the fact that computers will provide repetition indefinitely without getting tired or frustrated, but computers rarely offer students different ways to do tasks or new solutions. This indicates that digital learning is good for some tasks, but not others, possibly we are in an interim stage, and in the future AI technology will adapt to our needs more effectively. One of the teachers referred to technology enhancing more general skills such as challenging difficult concepts and overcoming the fear of difficult knowledge.

> I want to get them interested in something that might be intimidating to them. The point is that this is a skills level class, which isn't what university is about I still consider my class to be a university class so I try to teach more like principles in that sense I don't want to dwell on the particular software. (Teacher 5).

This indicates that students find technology intimidating, despite the image of young people being very comfortable with digital technology. The teacher stated that there were pockets of knowledge. In some ways

students are very proficient but in others they lack basic knowledge. It is also acknowledging that using digital technology can often turn classes into computer skills classes rather than English classes.

> Obviously doing something concrete you have to make choices this way, so there's a constant struggle about what to do. Do you spend time teaching them software where you are not really trying to go? You are trying to teach them how to do things. (Teacher 5).

In this case although students might be learning computer skills the teacher laments that the class is not a computer class and the students are not computer majors. The words ‘constant struggle’ indicated that in all classes incorporating technology teachers are constantly balancing how much time is spent learning how to use the technology and how much time is spent on the goals of the lesson or course. This could also be a major factor in teachers choosing to use technology. How much time might be taken out of the lesson to learn how to use the technology, which is time not spent on the main learning goals. In the case of something like Google Docs the teachers use the software over and over again so the time and effort spent in teaching students how to use it will be only a small proportion of the total course. On the other hand, technology, which is only useful for one or two activities might not have such a beneficial pay off. Asked whether the teacher thought they had wasted class time they replied;

> Well I think I don't feel that bad about it because in the end what are the things they are learning to deal with? Certainly, people will have computers as a big part of their life no matter what they are doing. (Teacher 5).

In the case of the university being studied, students have limited computer literacy classes, so the teachers may feel that they need to fill this gap in the students’ knowledge even though it is not part of the course description. On the other hand, another teacher was very focused on the fact that pedagogy and learning English should be the main goal.

> I think that's a disadvantage of technology that you can get so bound up in the technology and software that you actually lose sight of what you are trying to achieve. (Teacher 4).

In one case the teacher lamented the fact that technology was not available, and that it would help students in their future career if it were available.

> Nowadays it's better to produce reports and analyse data on the computer than using calculators. It's going to be a much more useful skill when they leave university. If they are using calculators and rulers to draw graphs, it's not ancient times. But the school wants students to be accepted by companies at the end of the day so they should be able to be to do such things like analyse data and make graphs and things, but how do you do that if you don't have the proper lab, but we can't do anything about it. (Teacher 6).

Another teacher stated how technology can make the boring job of memorization more interesting. Although many people see technology as a way to introduce more constructivist styles of teaching with flipped classrooms, there is a certain amount of learning especially within foreign language education that involves traditional rote memorization. The teacher stated that using applications on the phone that utilize mnemonics help students to learn vocabulary effectively, although they found that many students were accustomed to learning from paper as that was what they did in High School and this was very comfortable for them. Another teacher stated that they wrote down a list of vocabulary for students to learn. If they had known about software it would have been much more useful for students.

> The stumbling block is often in the vocabulary, so I was thinking of somehow using their mobile phones, so that they can sit on the train and study. (Teacher 4).

Half of the students said that they used their phone to study on the train. Interestingly one of the students said that she would do easy study on the train with her phone, but if she was preparing for a test she would study at home using traditional paper. Another of the students said that she only used the phone for studying vocabulary on the train.

> It's not so heavy as the textbook, so I can practice on the train. I don't have to waste the time. It takes about 1 hour to come to

> university, I can study on the train. (Student 2).

One of the teachers explained that they thought that you could only use your phone for studying on the train when it did not require much concentration. This is indicating that there are limits to what can be done on the train and the image of mobile learning permitting students to study anytime, anyplace is incorrect.

> There are certain things you can do on a train but if it's something that requires too much concentration I'm not sure if it's possible. I suspect your mind wanders. (Teacher 4).

Some of the teachers said that they used time on the train for reading English articles. The teachers have a much higher level of English proficiency than the students, so that reading in English would not be as cognitively demanding for teachers as students, which seems to indicate that when learning is more cognitively taxing, the train is not a good place. This is very important when considering the type of online tasks which might be assigned to students outside class.

In conclusion, all the teachers saw numerous benefits in students using technology in the classroom. These ranged from making the classes more interesting by using authentic material as well as teaching students skills, which they will use in the future. Technology could also save time for students by enabling them to communicate with teachers between classes and receive feedback. Students can also study on the train when commuting to school, thus not wasting time, although there are limitations as to the types of study which can be done on the train, with teachers and students agreeing that cognitively taxing tasks are not suitable for commuting time. Additionally, there is a reduced risk of students losing their work, students can use applications which automatically save their work, although there are still problems with formatting documents on different computers, but overall technology was seen as a very positive thing for students. Finally, technology can be a source of innovation in the classroom. Teachers were teaching in new ways using flipped classrooms and changing the environment of the classroom with students taking responsibility to bring content to the classroom. These aspects of technology can be highly motivational for students.

4.3.3 The teachers' desire to learn new skills. A number of teachers expressed their desire to learn new things. One of the teachers said that some teachers knew many things about technology, but workshops are needed for the people who do not know about technology. The teacher went on to say that some people assume that everyone has technical knowledge and feel frustrated when they don't. Another teacher commented that they enjoyed learning about technology as it helped them stay young.

> I think they sometimes feel frustrated, but I would like to say that I am quite interested in learning from them, I think I am a good student as well as a good teacher, so I would like to learn more if we have enough time. I don't want to be narrow minded and I don't want to be insular so I would like to say in a loud voice, I am very open to experience and welcome it. (Teacher 8).

> Most of the time I like I think I feel that I'm getting older and as I get older it gets more and more difficult to get to know new things, so when I have time and opportunity it is very welcome I am very happy to know it. I welcome the challenge. (Teacher 9).

These are interesting statements, as many people assume that older people do not want to learn about technology, but these teachers are saying that they actively want to learn new things. This indicates that university workshops and training programs would be welcomed. Both teachers mention if they had enough time they want to learn about technology, implying that they consider it takes a lot of time to learn new technology. There also seems to be an implication that they want someone to teach them rather than trying to learn by themselves. Another teacher talked of wanting someone, who knows about technology to collaborate with. Although the teacher had a lot of knowledge of technology they wanted to learn new ways that technology could be used in education. On the other hand, none of the students expressed any interest in having workshops to learn new technology. This might reflect a difference in learning styles. Students tend to search online how to use technology or ask their friends rather than go to workshops.

> Interviewer: Would you like to have a technology centre where you could learn many things about technology?

> Student 1: No thank you, no thank you, I know how to use the computer very well, it's fine to discover on my own (Student 1).

In conclusion, many of the teachers wanted to learn about technology and many of them wanted traditional workshops to learn. On the other hand, students did not think that formal workshops were necessary. Students were happy to learn through trial and error or through using the internet. Some of the teachers also saw learning technology as a way to stay young. Many of the teachers commented that they would appreciate someone, who could collaborate with them to create new ways to use technology for education.

4.3.4 Promotion of new learning styles. A number of teachers referred to technology as a positive way to promote new styles of learning. In one case the teacher referred to the use of a Google docs sharing activity enabling students to use English to perform a genuine task. Within 'task-based learning' the learner is given more control over the language they produce and the style is less teacher centred (British Council, 2004).

> Sharing the document together they are learning how to use the tool while doing the activity. It's a genuine task because when it is completed the task is finished. (Teacher 3).

Another way in which technology is promoting new learning styles is through a type of flipped classroom. In a flipped classroom, students learn content outside the classroom, and in the classroom, they share material and engage in ways to assimilate knowledge such as discussions. Although none of the teachers called it flipped learning they stated that students were asked to use their mobile devices to research information to share with the rest of the class.

> Classrooms are where people get together so we can do things collectively, but when they are at home or alone probably they can use Smart Phones in a much more productive way. (Teacher 10).

> There are two things I do occasionally, I have students do a little bit of research. I want you to check these words, I want you to find out what these things are or I want you to find me an

> interesting place to visit in Kamakura. Some kind of little bit of research which they can do on the internet on their phones and in which case that makes the class go very well. (Teacher 4).

> Last year I offered the opportunity for students themselves to present their own research by media so they came up with many YouTube and many visual materials of their own, and they were very excited to have such an opportunity in presentation classes. I think the classroom has to be interactive, teachers and students can learn from each other. (Teacher 8).

The idea of students learning from students was also mentioned by another teacher, as the teacher states, in this way students can learn about the material more deeply.

> You have one student helping others, this kind of interaction can be quite interesting and useful. People often say you learn it better when you teach it yourself. This is definitely something that is reproducible in computer classes. (Teacher 5).

Finally, teachers commented that information on the internet was new and therefore it was much easier to keep the lesson current, which in turn made lessons more exciting for students.

> I ask them to connect to YouTube, I use it regularly in my interpretation training class. Textbooks are in a way dead materials language wise. The internet it's contemporary and live. I want them to listen to live people speaking English. And another thing is that it is quite different from the paper based and would make them interested in doing the assignment rather than listening to the boring textbook recording (Teacher 9).

In conclusion technology is providing students with very current information making learning more interesting and relevant, whilst also allowing students the opportunity to collaborate with their peers, either through helping each other to use the technology or through presenting their own unique material to the teacher and other students. It also enables classes to be flipped so that class time is spent engaging with the teacher and peers. This makes the learning experience more social constructivist, by which students learn more deeply.

4.4 When Technology Does Not Work

In Japan, there is a paradox between the number of technology companies such as Hitachi, Fujitsu, Toshiba and Panasonic, and the amount of technology used in education. Although many institutions and private individuals use Japanese products, there is very little technical support offered. This lack of technical support is reflected very strongly in the perceptions of teachers, but very little in the perceptions of students. The students were asked specifically if they would like help learning about their computer, or repairing their computer, all of the students said it was not necessary. On the other hand, all of the teachers said that they would like more technical support when things go wrong or when they are unfamiliar with the equipment and software. This might be related to teachers regarding their main job to be teaching and researching rather than learning to use technology. In this way, they resent time spent on learning to use technology and want this job to be done by someone else. This section is divided into whether teachers knew who to ask or could ask someone when they had problems, their perception of showing lack of technical capability in front of students, and the level of trust for technology and technological support.

4.4.1 Knowing who to ask. It is inevitable with any complicated system being used by numerous people that it will sometimes fail or that users will be unfamiliar with its usage. In these cases, it is necessary to get advice and help. In most cases time is not a big issue and you can wait for someone to help you or you have time to figure out the solution yourself. Unfortunately, in the case of education there is limited classroom time and there will be a group of students waiting for the lesson to start. In this situation time is of the essence. The problem can be exacerbated in universities when a variety of teachers use the same equipment and teachers may use different classrooms for every class they teach. The following is a description of a variety of situations where the equipment did not work and the teachers felt that they needed support.

One teacher described using an electronic whiteboard. In three years the teacher could not make it work on three occasions, they stated that as it has happened before they know who can help to repair the equipment. They

telephoned the office and that person came quite quickly. The teacher could continue with the lesson while the other person tried to fix the equipment. Eventually it was found that a previous teacher had unplugged some of the cords. This is not a problem that could be anticipated or easily avoided.

> It's more of who I know. It's not like this task is designated to one person, but that person is very helpful. They are knowledgeable about these things and they can solve it. (Teacher 1).

The teacher was referring to the fact that there was no one in the university specifically assigned the job of helping with the electronic whiteboard, but one of the office staff was good at using technology and could help. Another teacher was much newer at the university and did not know who to ask. The teacher went to various offices, before the classes began and was told that it was not their responsibility.

> I go to a room to ask and they say "I don't do that, what are you doing here?" It should be easier to do. I've basically had to muddle through. It seems a reasonable idea that there are a certain number of staff who are there to give general help to teachers and students. If there is some problem with something then you need someone quickly to come and sort it out. (Teacher 3).

Another very experienced teacher expressed the feeling that they might be bothering administrative staff if they asked for help. This is a breakdown of the communication between administration and teachers, if there is not a clear system of who to contact in the case of technical problems. They went on to say that when there was a designated assistant with an office near the room it was very easy to ask for help. A number of other teachers also commented that the classrooms are often very far from the main office and it can waste a lot of time trying to find someone to help, and that it is confusing to know who you should ask.

> It requires quite a bit of effort, you've actually got to go and see people and you've got to worry about whether they are busy and whether you are troubling them and then you can get somebody to go over to a classroom to check the equipment. If it's the language lab I'd phone for the LL assistant to come and help, which is an easy thing to do because she is in the next room. (Teacher 4).

> In this university, the Academic Affairs Office and classroom are a bit far away in distance, but in Osaka university it is just beside the classroom there is a technician's room so that they are closely connected. So, any problems as far as I know are solved very quickly. (Teacher 8).

> Perhaps it depends on the room, if I was in the Language Laboratory I would call the assistant and in other times I would call Office of Administrative affairs. I can't think of anybody else. (Teacher 7).

Some of the classrooms do not have anyone who can help. For example, one of the rooms is equipped with Apple computers and the technical staff do not maintain or support these.

> If we try to hand off the responsibility too much then we might lose the lab, so in that sense I totally do it myself as do most or some of my colleagues who also use the lab. I don't necessarily trust their expertise more than mine. (Teacher 5).

This is an interesting comment, as although the teacher initially says that there is no support, they later say that they don't think that the technology support is more competent than they are themselves. This could be an important factor in deciding whether to ask for support, whether the teachers have confidence in the technology support staff. Another teacher states that they don't know who to ask and do not trust the support staff.

> Maybe I should ask the systems[5] or office of academic affairs. I haven't been told, I really don't know! But maybe I don't really trust them for that. I am so used to not getting any help from the system people so I have become self-sufficient. (Teacher 6).

Trust is a result of understanding risk and forming your measure of how much risk is involved with someone or something and therefore how much that person, concept or thing can be trusted. In this case the risk is how quickly the support staff will come and whether or not they will be able to solve the problem. If the teachers perceive the risk to be small that the technology will break and trust that support staff will come quickly, they are more likely to use the technology.

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[5] The university technology section

In conclusion, it seems that the system of support is not clear and because of the distance between the classroom and the administrative offices, teachers are reluctant to ask for help. Due to the lack of help available, most of the teachers have become self-sufficient. This may be related to a lack of trust. The teachers don't trust that the technology support can really help them if they have a problem. There may be teachers, who are not using technology as they have not become proficient, a number of teachers did not worry that the equipment would not work, but they were avoiding using technology.

4.4.2 Showing lack of technological competence in front of students. In order for a teacher to be regarded as competent they need to possess knowledge of the content they are teaching, knowledge of the pedagogy, as well as knowledge of how to use technology in the classroom. In view of this it seems that teachers are correct to worry that if they appear to be unable to use technology, students might regard them as lacking in teaching skills in general. A number of teachers expressed concern that they did not want to appear incompetent in front of students. One teacher stated that they wanted technology to be a tool to help them do their job, which they considered to be teaching content rather than using digital technology.

> Honestly, I knew that I have to do it, but I wasn't efficient enough to use it freely at my free will and I didn't want to totter, I didn't want to dither. Not be competent in the class in front of the students. I just wanted to give them instructions while I'm doing my job. (Teacher 9).

Another teacher commented that they felt nervous using technology in front of students, and that the teacher worried about maintaining respect of the students if they could not use the technology. There seemed to be a hurdle, but the teacher admitted gaining confidence over time.

> At first, I was quite upset, but I realised all I need is confidence and be calm enough otherwise I lost control of the students, by teaching at two universities I think that I became very proficient and I feel very comfortable in teaching (with technology) even me, I mean like an analogue teacher. (Teacher 8).

This is an interesting comment as it would appear that the teacher did not want to use technology initially. There was no specific pressure from anyone to use technology, so the teacher themself felt that it was needed to teach the class effectively. It is interesting that even though the teacher became proficient they still refer to themself as ‘an analogue teacher.’ For another teacher, it seemed to be the limited time between classes that was a problem. The teacher needed to set up the equipment but there is often very little time after one teacher leaves and before the next arrives.

> Yes, in some way one doesn't want to appear to be rushed, you know you want to at least appear to be professional and ready and calm. (Teacher 3).

> I do tend to try to figure out everything before the class so that it will go smoothly in the class that saves my energy because I don’t want to be rushing around and in a panic, I like to be prepared. (Teacher 4).

One teacher commented that the feeling of not appearing competent might be connected to how well you know the students and that the feeling of nervousness increases with the size of the class. In this way university teachers are again at a disadvantage over school teachers in that they usually do not meet the students on a daily basis to build up a strong relationship and the class sizes are often very large.

> Luckily, I don’t have a big class. For example, if it’s a large class there are 30 students or 50 students and if I’m struggling probably 30 seconds will feel eternity, but luckily this class there are only 4 students I know them really really well. And I said Arrrr it doesn’t work I’m really sorry and then they don’t mind it. Because they’d seen me using that machine beforehand. So, I don’t feel I didn’t feel that I’m losing their confidence in me as a teacher. (Teacher 1).

A couple of the teachers commented that when you use technology you just have to accept that it will sometimes not work. One teacher said that if technology broke down frequently they might decide to not use it.

> Maybe once a semester I can bear with it especially in front of the students but if it happens more than twice I feel, “Is this a good tool for me to use?” (Teacher 1).

Another teacher commented that you have to just accept that the technology will sometimes not work. This was repeated in various ways by other teachers, that it is just the nature of technology. Possibly this is a difference between the younger generation Younger people do seem to accept that technology will sometimes not work, based on comments by students, but some teachers seem to fear that they will appear unprofessional when they cannot make technology work. Additionally, lack of knowledge of technology makes teachers feel that they cannot fix it when something goes wrong. One of the more technologically confident teachers didn't say that they weren't worried when the technology failed, they just stated that they would try to fix it for the next time. All the teachers wanted to appear to be competent in front of students.

> I mean in the end you have to sort of get to the point where you can be cool about these things, they happen, and then of course I went back and the next class I made sure to spend lots and lots of time writing something up that I could use that would work better (Teacher 5).

The teacher also had some very interesting comments on whether teachers needed to be up to date with technology. In their view as a teacher we should be teaching knowledge that is timeless, enabling students to learn to use technology rather than teaching students to use technology.

> As teachers, we aren't supposed to ride fads, we are supposed to teach the knowledge that doesn't change. (Teacher 5).

In conclusion, the teachers felt nervous to look unprofessional in front of students, this is exacerbated by large classes and having very little time to set up before the class. Over time when teachers become confident with the equipment and students, this ceases to be a problem. Additionally, the most confident teachers did not feel any reflection on themselves when technology broke down. They felt that it is a natural aspect of using technology and you should just try to prevent it happening in the future. Lacking confidence is the problem rather than students really judging the teacher. As shown later in the students' data, they were not concerned with teachers' technological ability.

4.5 Pressure to Use Technology

The pressure to use technology can be positive or negative. The data showed that in some cases teachers started using technology due to a certain amount of pressure and then found it to be useful, but in other cases excessive pressure caused teachers to try to avoid using the technology. Teachers can feel pressure to use technology from various areas. This is not necessarily a real pressure it could be imagined by the teacher. In this research teachers felt a mixture of pressure from the university administration, their colleagues, students and society in general, but no one stated any specific pressure from the ministry of Education.

4.5.1 Pressure from the university administration. The university has two systems that teachers are expected to use, one of them is an intranet (Cybos) and the other is an in-house learning management system (Manaba). Teachers were asked specifically if they had felt pressure to use these systems. I will investigate whether the amount of pressure affected perceptions of teachers or whether the perceived usefulness of the technology affected perceptions. All the teachers but one teacher were using the university intranet. Most of the teachers said it was very time consuming and one said that she remembered nostalgically the days when everything was done by paper memo.

> At first, wow! this is very convenient, but it is very tricky because in Cybos there are many information at the same time and we have to tell this is already read or not and I must say I love the old days when we used to share information on a paper basis, I know this is environmentally unfriendly, but I don't like Cybos very much. (Teacher 8).

The teacher acknowledges that at first, they thought it was convenient, but the reality of the system was confusing. In this case the pressure from the university forces the teacher to use the technology, but they do not like it. Another teacher had not signed up for the intranet as they thought it was too difficult with everything in Japanese.

> There is some pressure to use Cybos which I have resisted because my Japanese is not good enough particularly reading.

> And again, I don't think the system has been properly refined so there are lots of messages that are sent back and forward that are totally irrelevant. (Teacher 7).

They felt that the amount of time, which would be used was not worth the usefulness of the system. Although all staff are required to use the system, this teacher has not been forced to use it. Many of the teachers said that the intranet is very useful. I asked specifically about aspects of the system that could allow the university to monitor teachers, but no one was worried about this. No one expressed unpleasant pressure to use the intranet and most teachers seemed to think the benefits outweighed the hurdles of understanding the system and the time spent in the system.

On the other hand, the learning management system was not perceived useful by some teachers, but very useful by others. Two teachers stated that they were using Google Docs instead of the LMS, despite the fact that the LMS contains many features that are not included in Google Docs. One of the teachers felt very strongly that the people implementing the technology did not have the ability to choose the necessary technology.

> I feel quite strongly about this, yes, I feel very strongly about this. Basically, people are making decisions and they don't know what they are doing. Not to be arrogant to say that I know what I'm doing but for example Manaba is our Intranet, but I think that Google drive is a life skill, Manaba is just not powerful enough, people making decisions about technology in the universities are not the people who should be taking the decisions, in universities there are communication issues between the administration staff and the technology department and the teaching staff, and they are talking different languages….I would be slightly perturbed if the university said only use Manaba, we insist that you use Manaba. Manaba is only temporary so Google drive is a life skill not just a study skill. (Teacher 3).

It is very interesting that the teacher thought that the different groups involved with technology in a university did not speak the same language. This does not mean literally speaking different languages, but that the different groups don't understand each other. In many countries Learning Technologists have been hired over the last twenty years to bridge the gap between teaching faculty and technology specialists. This type of staff appears to be uncommon or non-

existent in Japan and certainly there is no one with this job description at the university under investigation. It is also interesting that the teacher describes the Learning management system as a skill for students to learn rather than a tool for them to use. There is an implication that it is difficult for students to use the system.

> I don't really know what it is and I haven't used that yet, I can see there are some advantages to it although again I'm not sure it is totally necessary when there are commercial apps that are already available… Manaba is something they can really only use on campus or while they're a student, so in a way for a lifelong skill it's better to teach them something they can use after they graduate, so for that reason I feel google docs is more useful. (Teacher 7).

It is interesting that the teacher admits to not having used it, but still thinks another system is better. This may indicate better faculty training would raise awareness of the benefits of certain technology, although some teachers who had attended training sessions had tried to use it and given up for various reasons.

> I am not using Manaba at the moment. I have used it before, and when there was a session I thought that's very nice and handy and I put some input of the questions and it went wrong it didn't work and I tried several times and quite a few times I failed and I should have consulted somebody but then I thought it can wait I'll do it later when I have more time, but it is still later... Myself I cannot find a good way of taking advantage of that question answer system. (Teacher 9).

> Computer teachers love Manaba, but I cannot use Manaba, I think that Cybos (intranet) is enough. I was strongly encouraged, but I don't feel confident enough. (Teacher 8).

In this case the teacher's lack of confidence seems to be the main reason for not using the LMS. Many of the teachers seem to not be clear about the different functions of the intranet and LMS.

> I'm already dealing with my own emails, I'm dealing with Cybos, I'm dealing with the portal site, that's enough. I can't say this but I don't want to use it again. The thing is if I had started with Manaba before all these other things I might find it useful, but I've got enough communication methods. My assumption is that a lot of teachers don't use it and I'm quite happy to use email with students. ((Teacher 4).

Most faculty are using the intranet, as this is essential to receive important information relating to work responsibilities. The LMS on the other hand is optional as teachers have the freedom to choose how they teach in the classroom. This is connected to the fact that all classes are taught on campus at this university, thus the LMS is not essential to teach classes as it would be in a hybrid or online program.

> Cybos I think was a good idea and I use it very much, but Manaba I think I feel pressure from the university that I have to use it, but honestly, I haven't used it very much, and probably that's one of the reasons why I feel pressure. It's just a personal feeling the university never picked me up. You know when you read announcements I feel Oh maybe I should be using Manaba. (Teacher 10).

> I was completely fine with using Manaba. I was just "Is it really going to work or is it just going to give me a lot of extra work to do?" Manaba I have to say is the centre of running my classes right now. (Teacher 5).

> I feel it's a bit unfair that all kinds of teachers have to use the same amount of technology because it really depends on what you teach. We are like professors so we should not be monitored by the office people really, but nowadays the power balance is going against us. (Teacher 6).

One of the teachers was very optimistic about using Manaba as they viewed it as useful, but another teacher commented that technology is not equally useful for all teachers, so the university should not put pressure on teachers to use it. They went on to comment that university professors should be free to teach in the way that best suits their students and the subject, but they felt that the balance had shifted and the university administration was putting pressure on teaching faculty without fully understanding their job. There is obviously a difference between different disciplines about whether technology is necessary. In general, most academics want the freedom to teach how they choose at the higher education level. It is common for academics to complain that they are not understood by administrative staff. There is often a divide between teaching faculty and administrative staff. The role and work of both sides is probably poorly understood by the other side. In the case of the university being studied, the head of each administrative department is a

professor, who still has teaching responsibilities. In this way, although there may be a shift in the balance of power it has not been as great as in other countries, where teaching faculty move into administration and give up teaching altogether.

4.5.2 Pressure on Teachers to Use Technology from Colleagues. Only two teachers said that they had asked other teachers to use technology for teaching. Both of them admitted to using their power as full-time staff to force the reluctant part-time staff to use the learning management system.

> I think for part time staff because they are so busy doing so many classes at so many different places that they don't do as much as we would like them to do. (Teacher 3).

It is certainly a problem with so many classes in universities being taught by adjunct or part time faculty. Part-time staff may not have the time to monitor learning management systems and may not be as dedicated to the specific universities to learn about new technology for each university.

> She (the part-time teacher) said at first that she had never used that kind of textbook, she said she had never done it and also in addition to that there was that (technology) function attached so that she said she felt very uncomfortable, but I used power to say, “Well this is the textbook that we have chosen.” She is a part-time teacher and I don’t think that she had an option to say no, so she reluctantly went along. (Teacher 1).

In this case it is interesting that the full-time teacher said that they used power to force the teacher to use technology. There are obviously exceptions and some part time instructors are technology innovators, transferring knowledge and expertise from one university to another. Unfortunately, this research did not have the scope to interview part-time instructors on how they feel about having to use technology in the classroom.

4.5.3 Pressure from students. Interestingly none of the teachers felt pressure from students to use technology and nearly all of the teachers stated that they would happily ask students to help them if they could not understand.

> Interviewer: Do you feel pressure to keep up with your students?
>
> Teacher 9: No, absolutely not, I ask them and by asking them they are happy to share their knowledge with me and by sharing they are learning too. I am very happy to ask advice of students how to use it. (Teacher 9).

Although the students did know more than teachers in some areas the students were not better than the teachers in all areas, as one of the teacher's stated, they have pockets of knowledge. As far as the students were concerned they were not particularly enthusiastic about using technology.

4.6 Teachers' Theories on Pedagogy

This is a collection of some of the comments made by teachers regarding pedagogy and their teaching style. Although this is not directly connected to technology use it gives an indication of how the teachers envision using technology as a tool in the classroom.

> Pedagogy should come before technology. Technology should be assisting the teaching not leading it. Clicks[6] was a classic case that the technology was created and then teachers were told to find ways to use it. (Teacher 5).

> I don't believe that university should be used to teach skills, it should be for higher learning. Classes which teach technology are often teaching skills, how to use various software. We should be teaching students how to teach themselves. This is an important distinction with technology. As it is always changing, students need to be able to teach themselves to use the next technology after they have graduated from university. (Teacher 6).

> There is still a place for classical styles of teaching, like recitation and chorus. Language learning is partly memorisation. The classroom should be for group work, the students can do online research when they are alone. (Teacher 10).

> This might be contradictory, but as a teacher we are human beings, we might be using AI robot teachers in the future and

[6] This was a mobile learning project implemented at the university between 2010 and 2014.

> that's a different matter, but as long as human beings are teachers I would like to keep the human relationship between teachers and students, so I am not really very keen on using the CALL (computer assisted language laboratory) room for teaching, it's an excellent training assisting room, but a teacher is not really necessary. That's what I believe. Because an instructor or some machine technician can be there but a teacher is live interaction with the students and we can see their expressions we can see their metaphysical other things, we have a 6th sense too so in that way even in 100 years' time, if a human teacher exists the interactive teaching system won't change much, perhaps it's my hope too. (Teacher 9).

Through these comments it is clear that none of the teachers see Artificial Intelligence (AI) or robots replacing teachers in the near future. Teacher 6 had a very interesting comment that university should be a place that teaches students how to learn to use future technology rather than teaching skills to use technology now. Other teachers stated that they thought teaching was a uniquely human relationship, in particular Teacher 10 commented that the classroom was a place for interaction between students and between the teacher and students. Technology is best used outside the classroom. These comments all indicate that teachers view technology as a tool to assist the teacher rather than a central part of the learning.

The University mission statement says that, "Students should receive the communication skills necessary to receive and transmit information while also developing understanding of the spirit of Christian love." (Kobe Shoin Women's University, 2014). This mission statement has not changed in recent years with the increase of technology. References to receiving and transmitting information could refer to technology, but teachers are not explicitly encouraged to teach these skills. This is in line with the teacher who states that they want to enable students to learn themselves rather than teach specific skills.

4.7 Students' Perceptions of Using Technology

The students had different perspectives on the use of technology in education. Most of them focused on technology making studying more interesting. All of the students had had some experience of studying abroad, and when they were abroad they had seen teachers using technology more

than in Japan.

> When I went to Australia, the teacher said “Why is Japanese not using computers, because Japan has a very high technology, but not good technology in education?” They said it and I thought that's right. (Student 4).

Most of the students focused their comments on a comparison of their experience with technology abroad and their experience in Japan. It was interesting to hear the comparison of those experiences. One of the students said that when teachers did not use any digital media the class was boring.

> Always just writing and talking, it was really, really, really boring I don't like English at that time, so it was just boring time. (Student 2).

However, another student said that the interest of the class did not depend on the use of the technology, but the teacher.

> I don't think that interest of class depends on technology, it depends on teachers. (Student 6).

This is an interesting comment and is echoed by some of the teachers, who said that pedagogy should come first and that technology should just be assisting that.

> Always basic teaching principles have got to be adhered to, you know the usual thing of providing material that's motivating, providing timely and useful feedback, providing encouragement, providing things in a repetitive way that's not boring that's recycling materials all those usual things that a teacher in the 1950s would have been familiar with still apply and if you ignore those things then the technology will not work as well as you want it to, if you go along with those things there is a good chance that the technology will be very helpful. (Teacher 4).

It is interesting that the teacher comments that the things that make a good teacher were known in the 1950s. This may be true, but since then many aspects of education have been studied, showing that constructivist and social constructivist styles of learning are more effective than the style of teaching where teachers were just giving knowledge to students, and the students’ role was to memorise this knowledge.

4.8 Use of Technology by Students and Teachers in their Daily Life

In general, the students used mobile technology to a far greater degree than the teachers. The teachers used their mobile phones for a few functions, but not to the same extent as the students. Teachers tended to use computers much more than students. All the students said they use mobile phones extensively to connect to social network systems. These are four of the responses to the question;

> Interviewer: How often in a day do you check your phone?
>
> Student 2: How many times? All the time!
>
> Student 3: Many times! I cannot count.
>
> Student 5: Three times a day morning afternoon and before I sleep, not all the time.
>
> Student 6: Recently not many like 150 to 200 tweets per day.

Additionally, three of the students said they were addicted to their phone, and that they would rather be late for school than not have their phone.

> I can't imagine because I really rely on the phone, I use it all the time, it’s like messenger, Facebook, Siri, if I lost my phone I'll be crazy! (Student 1).

All of the teachers except one spoke of not needing their phones and even feeling free when they were disconnected from their phone.

> Well I find it quite freeing when I don't (check email) but usually I do check them every day, so it's just occasionally when I'm on holiday if I haven't had access and I've found it quite freeing. (Teacher 7).

The students said that they did sometimes use their phones to study on the train, but basically only to learn vocabulary. Student 5 stated that she used it to study vocabulary for about 20 minutes on the train, until she felt

sleepy. Student 4 stated that it is a good study time on the train, but she often felt sleepy. Student 2 commented that the phone was much lighter than a textbook so she could use her hour commuting time to study.

Although the phone has many capabilities for reading, listening and even recording and checking pronunciation students seem to be using it in a very limited way, although Student 1 was using the phone to listen to Australian radio and practicing listening from other language learning sites. The most active technology user stated that she had watched videos on her phone, but she preferred a large screen size. There could also be a problem with students not wanting to be heard by people around them using their phone for English study. As teachers are not showing students ways to use their phones, the students are not familiar with the learning possibilities of mobile phones.

> I think it's good thing so if teacher gives me YouTube homework I can watch on the way going back to my home on the train or something like that, when I have free time it's good not wasting time. (Student 2).

Although Student 2 states that it would be useful to be able to study on the way home, most of the students admitted to not wanting to use the data package or battery time on their phone for study. In addition, most students and teachers agree that the ability to concentrate on public transportation is limited. If students are very interested in what they are doing, perhaps the level of concentration will increase allowing students to study effectively on public transport. This would fit with the responses of the students, who stated that they watched videos and listened to podcasts selected by themselves, but studying for a test necessitated being at home. Inevitably a podcast selected by themselves will be more interesting than studying for a test. In conclusion, teachers should not consider that all types of mobile study are possible on public transport; it depends on the interest level of the material, how cognitively challenging the activity is and individual differences in the ability to concentrate in different environments.

4.9 Technology Use in the University Campus and Whilst Commuting

One of the teachers stated that when they had asked students to watch TED talks on their phones the students had complained that it would use too much of their data package. These are students signed up with cheaper data packages, which limit the amount of time that can be spent on the internet per month.

> They thought it was a good idea, but they were on a package and I suggested that they watch it on the train but they said that they will exceed their package so they said that they didn't want to do it. They can only do it or want to do it on the Wi-Fi condition. I didn't realize that until they informed me that some of the students are on the package, so that they don't have a lot of capacity to download. (Teacher 1).

One of the students explained that she wanted to use Wi-Fi because her phone became very slow at the end of the month. It seems that rather than running out of data her phone slowed down so that watching videos becomes very difficult.

> I want to use Wi-Fi because at the end of the month it's going to be so slow because I use a lot. Yes, I use a lot and then I run out of data, like if I use Safari it's so slow, because I am getting to the end of the month. Yes, many students do this too, we use a lot, so some students pay extra money to use normally. (Student 3).

Other students commented that because they use the internet so much it quickly uses up all the data. In addition to that, Wi-Fi is faster, but the unreliability of Wi-Fi stops them from studying.

> I have enough data, but Wi-Fi is faster, but it's not convenient I think, it always has troubles, so I think I want to use Wi-Fi but it's not good. My mobile phone doesn't connect, my friend's mobile phone also doesn't connect, but some people connect and some place connect but someplace doesn't connect. I have problems. It stops me from studying sometimes. (Student 2).

Another problem that many students had was with charging their mobile devices. The heaviest user of mobile technology admitted to bringing three extra mobile chargers every day to charge her phone while she is

out of the house. This problem is caused in part by the university not allowing students to charge their phones on campus. The administration cited two reasons for this. One was connected to finance. In the past the university had machines to charge phones, which students had to pay for. These were not well used and were removed. The reason they were not used is that within an institution such as a university it is easy to find electricity sockets. The administration referred to these people as electricity robbers. The other reason is that the university does not have the space to provide charging for all students. One of the students stated that she had difficulty studying as she needs a charger to do her homework, so she goes home, but she also needs the library facilities so this causes a problem.

> There is no charger in the university, so I go home to study. I need to study in the library. If there is a charger, I can search in the library system. (Student 6).

Another student recounts buying a paper book instead of using mobile technology because if she uses up the battery time on her phone she will not be able to use her phone to communicate with her friends, check social media or listen to music.

> I prefer buying the book than paying for the application. Because my phone charge will be low when I use my phone so I prefer using a book. If the phone charge goes down I can't text my friends so I want to save it. (Student 3).

It seems from all the comments about Wi-Fi problems and lack of data that the image of mobile devices allowing students to study anytime and anywhere has still not been achieved and this is often affected by the infrastructure rather than students not wanting to engage in mobile learning. The problem is especially difficult on trains and in public places where there is no Wi-Fi. In the students' homes and in the university, there is some access to Wi-Fi. As the students and teachers stated that commuting and train time was a good place to study, lack of Wi-Fi or data seems to be a problem. In time, this may be solved but even in areas that claim to have full Wi-Fi coverage there still seem to be problems.

In conclusion, the emergent theory from this research suggests that the theory by Prensky (2001) of young people being better at using technology being so called ‘digital natives’ is flawed in that most of the teachers, so called ‘digital immigrants’, were more proficient at using the technology than the students. This is supported by Bennett, Maton, & Kervin (2008) who found that young people’s technology use and skills are not uniform, nor are the skills of so called ‘digital immigrants’. The students appear to use their mobile phones extensively for a limited number of functions, but are not using their phones to study. In contrast the teachers appear to be interested in technology and wanted to learn more, although some of them were lacking technical confidence. The problem with technological implementation was that it was not based on technology needed by teachers and the teachers did not have confidence in the reliability of the technology or technological support when something goes wrong. This fear seems to be connected to teachers’ fearing losing control of the classroom and the students’ learning. Connected to this is the question of whether technology saves or wastes time for teachers. In many ways technology saves time, with teachers being able to recycle materials. The final strand of the theory is the fear of some teachers and administration of the blurring of boundaries between work and private life through teachers being contactable outside work hours and connections made between students and teachers in social network systems.

Chapter 5 Comparative Literature Review

5.1 Introduction to The Comparative Literature Review

In their initial description of Grounded Theory Glaser and Straus (1967) stated that the literature review should be delayed until after the theory had emerged from the data. This was to prevent researchers being overly guided by existing theories and findings and consequently fail to look at the current data in detail. This may have understated the part that literature plays in Grounded Theory. In later work Strauss and Corbin (1990) stated that no one comes to research free of knowledge of literature, and it is unrealistic to expect researchers to put all knowledge to one side. Glaser however continued to state that grounded theorists should keep themselves free of

contamination from outside literature. Charmaz (2014) felt that it is the knowledge and interest in a field that brings researchers to a particular area of research. In the case of many researchers a literature review is expected. In order to accommodate all of these conflicting opinions I decided to conduct an initial literature review on technology in education, but it was not until after my codes and theories had started emerging that I went back to the literature searching for theories on technology and control, attitude formation and work life balance.

5.2 Stress Caused by Technology Removing a Sense of Control

Technology has brought about many benefits, specifically providing flexibility in the time and location of work appear to be two of the greatest benefits to workers. Unfortunately, although technology has provided benefits there have been unforeseen problems and stress causing professionals to feel a loss of control over their lives. The concept of loss of control used in this research is not one of direct control being removed from the less powerful by organizations and government, it is a subtler form of loss of power felt internally by the individual. Vostel (2016) states that although technology appears to give more freedom, it actually includes expectations, demands and pressure that people cannot control. This is very true in education with teachers feeling the expectation and pressure to use technology, removing from them some of the control they used to exert over the classroom. This sense of speed created through technology is actually undermining the nature of knowledge creation, which Vostel (2016) says should involve a slower pace for contemplation and reflection. In this case academics may feel a loss of control of their integrity as well as time. Although through interview data Vostel (2016) found that some of the academics still felt that academia was a place where there was flexibility as to what speed you want to work. It may be a fear of losing that flexibility that gives the sense of loss of control. As Wajcman (2015) states technology can offer increased flexibility, but it can also make workers feel tethered to work. In Stafford Beer's (1970) definition of control in cybernetics he states that in an organization control is not used as a gambler would, but it is related to the connectedness of components. In this way the sense of loss of control felt by teachers is a breakdown of the

relationships between teachers, administration and the machines themselves, which is why dialogue is so necessary.

5.2.1 Work – Life imbalance. In recent years technology has blurred the separation between work and life. Kinman and Jones (2008) found that over the last two decades the work-life balance of academics in particular has deteriorated. In particular academics reported working more over the weekend and in the evening than in the past. It was also found that academics who felt that they had a bad work–life balance were unhealthier than those who perceived that they had more control over their work schedule. Although this data did not specifically mention technology in relation to work-life balance of academics, Currie and Eveline (2011) specifically targeted the effect of e-technology on academics with young children. Technology has enabled work to be done anywhere at any time, allowing more flexibility, but this has not always been beneficial to academics. Increasingly work intrudes on family life. Although some aspects of an academic's work have fixed places such as on campus lectures and meetings, many other aspects of their job can be accomplished in any location. Edley (2001) called work-life a false dichotomy as we never really leave one sphere. This is especially true with working parents who are often contacted by childcare services at work, whilst work-related messages are often received at home. Although being able to combine work and childcare by working from home, can be extremely helpful, many academics work far more than a 38-40-hour week due to this. Edley (2001) states that, in fact, it is generally organizations that gain by allowing flexible working opportunities, with technology allowing organizations to extend their control into our homes. Currie and Eveline (2011) found that technology not only increases the amount of time spent working, but also the intensity of the work. They found that email messages were perceived as more urgent than notes or spoken requests. Interestingly some of the participants in this study admitted to rejecting mobile phones as it would intrude too much on home life. There was a feeling from a number of participants that messages received by text or email needed to be responded to immediately or at least within 24 hours, even on a weekend. Another way in which this increased connectivity is

causing a loss of control is through smart phones. In the past you might choose to ‘check your email’, but now with instant notifications another area of control has been taken away. Wajcman (2015) felt that these small digital devices are leading to a new form of intimacy, which is wonderful if you want more intimacy, but difficult to control if you are trying to maintain professional boundaries. She says that the stress felt by individuals depends on how much control they can and do exercise over when and where they make themselves available. Belkin, Becker, and Conroy (2016) found that it is not just the time spent replying to work emails and text messages that cause stress, it is also the anticipation of this that causes stress. They found that workers could never detach from work. This expectation is not usually explicit, but workers felt that they had to respond to emails immediately. This seems to support the findings that lack of control over the work-life balance causes stress, rather than the quantity of work.

Technology has allowed academics increased flexibility, but it has also impinged on their personal life and increased the total number of hours they are working. This causes stress for teachers. Teachers need to find a better balance between the benefits and disadvantages of digital technology.

5.2.2 Social network problems. Teachers and institutions are finding it increasingly difficult to decide on a policy for social networking relationships between teachers and students. The relationships between students and teachers are very complicated. Whilst they should be close and supportive teachers should not be friends with their students. This was always difficult, but with the advent of social networking there are even more complications.

Sugimoto, Hank, Bowman, and Pomerantz (2015) studied the online relationships between students and faculty. As Facebook was the dominant social networking platform at that time, they decided to study the relationships between students on Facebook and specifically the informal interaction between faculty and students. They considered that although it has always been common for informal interactions to take place between faculty and students, on campus or in cafes, the nature of online interactions is different as they are recorded and often broadcast to a wider audience. The fact that these communications are broadcast to a wider audience means that they

need to conform to norms expected by the public sphere (Sugimoto, Hank, Bowman, & Pomerantz, 2015, p. 8).

In addition, many faculty members are engaged in dual relationships with students, which are when a professional tries to maintain more than one role with a student. These dual associations may be teacher, sports coach, employer or informal friend. Strong relationships between teachers and students have been shown to be beneficial to a successful learning environment, however many faculty members stated that they felt that they had sometimes shared too much personal information with students (Sugimoto, Hank, Bowman, & Pomerantz, 2015).

Chretien, Farnan, Greysen, and Kind (2011) investigated what types of posts in social networking sites are viewed as appropriate by medical academics across the USA. They found that 55% of participants viewed it as never appropriate for a faculty member to send a friend request to a student on a social networking site. In addition, they found that academics had varying opinions of what students should post. Congress (2001) also found various opinions on what types of relationships between faculty and students were appropriate outside social media sites, so this seems to have been a difficult ethical issue even before social media. For example, respondents were split about 50:50 on whether it was ethical to have dinner or drinks with a current student. Added to which, friends on social networking sites are not the same as friends in the everyday sense. This causes a lot of confusion for teachers.

In view of this confusion, Sugimoto, Hank, Bowman, and Pomerantz (2015) recommended clear guidelines for teachers and students on the use of social networking sites. Although this has been tried in some institutions, it was found to be very complicated and possibly even a violation of academic freedom (Sugimoto, Hank, Bowman, & Pomerantz, 2015). In consideration of this Sugimoto, Hank, Bowman, and Pomerantz (2015) recommended engaging faculty and students in open dialogue as to the dangers and expectations of social networks. Chretien, Farnan, Greysen, & Kind (2011) also stated that students and faculty may be unaware of what their institution would classify as inappropriate behaviour. This necessitates some sort of guidance from institutions so that individuals can take personal responsibility

for their actions, but only 35% of participants reported having an institutional policy on dual relationships (Congress, 2001).

Although these studies focused mainly on defining what type of social networking interactions are appropriate, Fox and Bird (2017) focused on teachers' feelings of how to separate professional and personal interactions. Teachers wish to engage with students on some level outside the classroom, but increasingly advice from unions and government agencies is that teachers should avoid using social media in their professional lives. However, there is an ever-increasing societal pressure to do so. Fox and Bird (2017) call for more constructive guidance on social media use for teachers, there are obviously benefits of teachers using social networking, but also dangers. In the UK teachers seem to be developing individual social media behaviours, but in Finland debate between teachers and students has created a community of practice working towards a greater awareness of technological practices (Fox & Bird, 2017). They conclude by saying that everyone in society; students, teachers and administration need to be upskilled to learn how to capitalise on, rather than be negatively affected by, social media. Fenwick (2016) supports this in suggesting that the best way to encourage online professionalism is not for educators to seek ways to regulate students' online behaviour, but to encourage teachers and students to consider critically their social media interactions.

5.3 Drama Theory and Technology

Most of the negative perceptions of technology stem from teachers feeling that they are losing control of their private life and classroom autonomy. In considering the way in which technology could be implemented more effectively I would like to look at technology through the lens of Howard's (2009) Meta game analysis and drama theory.

Howard's metagame analysis (1987) tried to explain the decision-making process. He hypothesized that rational analysis of facts leads to a rational decision. In any decision-making process, there will be a tug of war between the opinions of the different parties. The most famous example is 'The Prisoners Dilemma', in this scenario two prisoners are offered some choices.

1. If they confess to the crime and the other prisoner also

confesses both prisoners will receive a medium length sentence.
2. If they confess to the crime and the other prisoner does not confess they will receive no sentence and the other prisoner will receive a heavy sentence.
3. If both prisoners do not confess they will both receive a light sentence.
4. If they do not confess to the crime, but the other prisoner confesses, they will receive a heavy sentence.

The best outcome for both prisoners is to not confess, but without trust, the worst outcome might happen when the other prisoner confesses and one prisoner receives a heavy sentence. Both confessing is the safest option, but will result in two medium sentences rather than two light sentences. In order to get to a position of trust, both prisoners must discuss their position and agree to a mutually beneficial outcome, in this case both prisoners do not confess. The best outcome can only be achieved through negotiation and trust, which is the basis of drama theory.

Metagame analysis tries to overcome the dilemmas of the various parties in the process by encouraging a sharing of deep understanding of the perceptions of all the players. Unfortunately, although understanding of the other parties' perceptions can aid decision making in some circumstances, it does not necessarily lead to the best outcome. Drama theory seeks to change the situation when all players have completely shared the details of their opinion and a decision has still not been made. Drama theory injects a level of trust through negotiation leading to a decision, with the best outcome for all players even when one player's best outcome depends on another's making a certain decision.

Howard (2009) states that when players know what the other party will do and how they will react to the knowledge of what other players will do, then they can make rational decisions based on trust. This knowledge is based on discussion and all players agreeing to change their positions. Regarding attitudes to technology use in universities, it might be possible for students, teachers and administrators to move to a position in which all parties agree to technology investments, usage and social media guidelines through dialogue

and negotiation as outlined in Howard's Drama Theory (2009).

In conclusion, it appears that stress due to technology is common in many areas of modern life. The way that technology has broken down the work-life balance is particularly interesting as many people believe technology to be providing more flexibility in working time. It is only now that people are realising that perhaps technology has infiltrated their life too much but find it impossible to disengage. In addition, the concept of education needs to be completely re-examined in view of the internet and the changing nature of knowledge. Memorization is no longer necessary and critical evaluation of information is becoming more and more needed as is the ability of knowing where to find information as highlighted in Connectivist learning theory (Siemens, 2004). In evaluating perceptions of technology, attitude formation was useful in explaining why certain individuals might make the choices they do to technology use, but did not help to explain how to change those attitudes. For these reasons Drama Theory was used to try to find a solution to the paradox of extensive technology use in daily life and limited technology use in Education. Bohm (cited in Angelos, 2010) refers to theory as being the 'theatre of the mind'. This is referring to theory being constructed, but also adapting and changing in the minds of the participants as well as the researcher. As stated before I initially came to the study of educational technology with an almost evangelical zeal; technology is good, so why aren't teachers using it? Through the course of this research my own perception of technology is changing. Over time the perceptions of most people change as they reflect on their experiences and observations, through an internal debate. Through drama theory all participants can retain a sense of control thus adapting their own personal theory of technology in a positive direction.

Chapter 6: Emergent Theory

> "The digital revolution is far more significant than the invention of writing or even of printing. It offers the potential for humans to learn new ways of thinking and organizing social structures." Douglas Engelbart (1997)

6.1 Introduction

In the classic book “Teachers and Machines: The Classroom Use of Technology Since 1920” (Cuban, 1986), the use of technology in the classroom is examined. Although this book was published thirty years ago, and technology has changed dramatically since then, many of the accusations made of teachers are similar today, with teachers being accused of being intransigent and narrow-minded (p.5). Cuban (1986) states that rarely was it asked why the teachers were not using the technology. He proposes that education requires constancy and change simultaneously, and it is this paradox that teachers must deal with on a daily basis. Just as teachers thirty years ago struggled with this paradox of maintaining stability whilst incorporating what is effective at improving efficiency and learning outcomes, teachers today are still struggling with this, and teachers are still being accused of lack of technical skills and lack of knowledge of how to incorporate digital technology into the curriculum (OECD, 2016). The assumption of most outside commentators is that not using technology could be an indication of a fixed mindset, but the evidence of this research suggests that teachers are eager to change and embrace a growth mindset (Dweck, 2017). Digital technology necessitates relying on technology specialists, but it is a lack of trust that is limiting the implementation of educational technology in many situations. As the technology becomes more advanced it is impossible for teachers to control all aspects of the classroom. This means that teachers need to trust in the technology and also in the ability of the technology specialists.

In an effort to understand the position of digital technology in higher education in Japan the present study has examined the perceptions of teachers and students at one university in Japan in relation to technology in higher education. Using grounded theory as a method to examine the qualitative interview data I was able to identify among the subjective experiences of a variety of teachers and students, the existence of several common perceptions and underlying concerns or hopes that are affecting the way that technology is used in this university. It is hoped that through these discoveries various recommendations can be made as to when and how

technology can be effectively implemented in classes and in what ways teachers and students need to be supported if this is to take place effectively. Finally, a framework which could offer guidance for technology implementation will be introduced based on drama theory (Howard, 2009).

6.2 Themes Identified

Although many individual opinions were expressed by participants in this study, these have been analysed to produce a main theme, which seems to run through all the data; this is a fear by teachers of losing control or autonomy of their private life as well as their classroom and professional life. Teachers are referring to themselves as old-fashioned and not using technology, but it is not the reality of how they describe their actual experiences. This may be self-deprecation as a form of protection faced with a loss of control, but it also might be something that the teachers are proud of, harking back to what they regard as a better time in education, when they were in control of their private life and classroom. Teachers do see positive aspects of technology as offering the potential for improving the classroom by making it more active and bringing the real world to students, but are very conscious of the educational outcome, technology should just be a tool to improve education when and where it might be effective, they do not want to lose control of students' learning.

6.3 Loss of Control Caused by Technology

> "Time is the most scarce resource in educational institutions."
> (Lortie, 2002, p. xii)

The most important theme to emerge from this data was that most teachers feared a loss of control in every area of technology. Most importantly, teachers spoke of loss of control of their private time through students being able to contact them at any time. In addition, teachers spoke of loss of control of the classroom through being forced to use technology with which they weren't comfortable, and also loss of control through students accessing materials over which the teacher had no control. The actual software and especially algorithms in social networking sites take control

away from teachers, making them feel impotent. Added to which, some of the teachers spoke of feeling that the balance of power had shifted in the university to one where the university administration has more power than the teachers. Cummings, Phillips, Tilbrook, and Lowe (2005) found that the majority of changes in universities are achieved through top-down developments from executive staff. They recommended a new framework for institutional change called 'Middle-Out' in which change is achieved though co-operative inter-organizational networks, for teachers to retain control. This is the type of technology implementation shown in Figure 5 (p.119).

6.3.1 Loss of control of free time. An area in which teachers were very clear that they feared losing control was regarding their personal time. A number of teachers stated that they did not want students to be able to contact them twenty-four hours a day, especially over the weekend. There was also a feeling that not only were students oblivious to the line that teachers may draw between their working week and weekend, but also that the speed of response expected has changed. In the past, notes may have been sent to teachers, which were picked up in their mailbox with a reply expected within a week. With digital technology, students are accustomed to immediate responses, even over the weekend and in the evening. This appeared to be very stressful for some teachers with one of them stating that they could not forget the message once they had read it, as it stayed on their mind throughout the weekend. This is supported by Kinman and Jones (2008), who found that the work-life balance of academics has deteriorated over the last two decades. Despite the promise that working from home will make life easier, the amount of work that academics do has increased (Edley, 2001), and so has the stress they feel from the intensity of needing to reply to email messages in the evening and over the weekend (Currie & Eveline, 2011). All of this adds up to a very unhealthy situation, which the teachers blame on technology.

When digital technology first became common place, many teachers shared their private email addresses with students. Now with social networking systems, more and more teachers are connecting with students in

social media. One teacher stated that this is breaking down the soft wall between teachers and students. The teacher stated that teachers do not want to seclude themselves from students, but people are comfortable with walls. Keeping a gap between teaching faculty and students creates clearer guidelines for behaviour. This is supported by the findings of Sugimoto, Hank, Bowman, and Pomerantz (2015) who propose that it would help institutions, faculty members and students to have the boundaries more clearly defined, although as they note this is very difficult. Kansas Board of Regents tried to do just that by defining that communication within working hours and within the university information technology system. Unfortunately, the definition of working hours is not clear for teachers and the main problems seem to occur outside university information technology systems.

If a solution were to be found for this it might be a more careful separation of digital communication for work and private life. As students are required to study outside the classroom, it is reasonable that they will try to contact teachers outside the classroom. In health care, there are various recommendations to physicians to keep a professional distance between patients and themselves to protect caregiver and patient confidentiality. In the case of education, it might be even more important to protect students. It is also important for the teacher to be protected. This is protection from potential abuse from students and parents, but also allowing teachers to have separate public and private personas. In education as in medicine, social media offers many positive benefits, so any control should be carefully considered (Gagnon and Sabus, 2015). One way of protecting students and teachers is through “dual citizenship”. The concept of “dual citizenship” is one in which a personal and professional social media presence can be maintained. Although Gagnon and Sabus (2015) recognize that with the increasing accessibility and searchability of the Internet it is very difficult to compartmentalize a person’s public and personal persona, so privacy cannot be guaranteed. Sugimoto, Hank, Bowman, and Pomerantz (2015) recommend ‘dual relationships’ between faculty and students, where the different types of relationships that students and faculty have are acknowledged. This could be as teacher and athletic coach, or instructor and

employer as well as friendships between teachers and students. They note that the issue is further complicated by levels of education, the relationship between teacher and undergraduate is not the same as teacher and doctoral student. Their conclusion is that the best way to help faculty and students alike is through an open discussion of the expectations of both groups and possibly the dangers of communication through social networks. Cain (2008) had many of the same conclusions, but added that despite all the possible dangers, social networks provide ways for faculty to strengthen their ties with students, which can be beneficial. He also warned that institutions monitoring any type of social network system, in-house or commercial, is a legal grey area.

It is possible that teachers have allowed students to come into their private life through social media and are now uncomfortable with it. More and more institutions are creating internal networking systems. Students and teachers might be better using these systems to keep control of work and private life separation. As one of the teachers commented, this is not only from the point of view of teachers protecting themselves, but also protecting sensitive information (Teacher 10). There is always a danger that systems can be hacked, or that information will be leaked inadvertently, but this will be reduced if the teacher and institution can keep greater control over the networking system. Some of the teachers stated that they did not trust the algorithm of the social networking system to protect their information. This is a valid concern, but specialist in-house networking systems are probably more trustworthy than commercial platforms. Unfortunately, many of the teachers were not actively using the university learning management system, even though this might be a better way to manage their privacy and control students contacting them outside work hours. Teacher 7 was not using the intranet or the university learning management system as they thought it was too complicated, and Teacher 3 stated that they would be perturbed if the university insisted on use of the in-house systems, as they were more familiar with Google and they didn’t want to learn another system. This is an underlying problem with all types of digital technology that it seems to be constantly changing. As soon as people are familiar with one software or

system, it is updated. For many of the teachers this was another way in which they felt a loss of control. Any learning management system would need careful implementation, so that teachers and students could see that this was for their own protection rather than a top down management decision. There is also a need for ongoing support and discussion with all stakeholders before systems are changed or upgraded. Ally (2009) found that educators need to see the benefits of mobile learning, by being shown results of successful projects before they want to implement it in the classroom. They then need to be educated in how to design mobile learning and they need to be supported as it is implemented.

6.3.2 Loss of control of the classroom. The teachers feared the loss of control of their classroom. Reinders and White (2016) state that although learner autonomy has become an assumed goal of education, and that technology can increase autonomy for students, some teachers and students are not comfortable with increased autonomy. Many teachers were trained in a time when teachers controlled students' learning. Even if students were learning independently it was usually monitored by the teacher. Technology has provided rich environments for autonomous language learning. Benson (2008) hypothesises that there may be a growing uncertainty and feeling of powerlessness felt by teachers due to the increased autonomy of learners. This powerlessness is possibly a feeling of lacking control. In this research, most of the teachers were giving students small areas in which they could be autonomous, but not really allowing students to become truly autonomous learners. Another way in which it was very obvious that teachers did not want to lose control in the classroom was with technology failure. Even though technology failure is an inevitable fact of using increasingly complicated digital technology, teachers feared being viewed as incompetent by their students. This is possibly related to the TPACK model of technology in which technological knowledge is viewed as necessary to be a competent teacher (Mishra & Koehler, 2006). Without technological knowledge teachers may fear that they will be labelled incompetent. It is also possible that this is related to having a fixed mind set, in which the teachers see their knowledge as fixed when they finished teacher training and view educational technology as the

realm of young people, rather than a skill for everyone to acquire. This fixed mindset is evident in teachers calling themselves ‘Luddites’ or ‘old fashioned’, it is also reinforced by the widespread acceptance of ‘digital immigrants’ and ‘digital natives’ (Prensky, 2001), even though this theory has been criticized by a variety of researchers (Bennett, Maton, & Kervin, 2008; Helsper & Eynon, 2010). As technology is so embedded in the classroom now, knowledge of how to use technology for pedagogy is a skill needed by all teachers. As Selwyn (2017) states, digital technologies should be understood in terms of the complex ways in which teachers have to negotiate technology use. For example, Selwyn (2017) explains that teachers are often called on to not only be a source of information and supporter of learning, but also to discipline students. This might encompass not only traditional forms of discipline, but also social media, online bullying and responsible use of devices in the classroom. Teachers are also called upon to show students how to use technology. Teachers may fear that they do not have knowledge of these spheres to effectively supervise students. Teachers who have not had training in flipped classrooms or using technology for higher level skills may feel that they are lacking competence. Added to this, the concept of knowledge is changing with the internet. In the past the teacher may have been the main source of content knowledge, but as content is now abundantly available on the internet the role of the teacher is changing fundamentally. Selwyn (2017) calls this moving from ‘sage on the stage’ to ‘peer at the rear’. This is supported by the Pew Research Center’s study into expected trends in teaching by 2025. They found that most technology experts thought that the model of one size fits all content delivery will be over and the role of the teacher will be more as a coach requiring a new emotional skill set (Rainie, Anderson, & Connolly, 2014). These new expectations of teachers and styles of teaching require skills which teachers may feel that they do not possess.

In addition, it is becoming more and more difficult for teachers to control the quality of what students read. With the abundance of false news and biased websites, teachers have lost control of their students’ learning. One of the teachers commented that she would only let students use references that were found on an academic search website. Although this is an

understandable response it is unrealistic with the abundance of information available, to limit resources. More and more schools are teaching critical research skills to help students assess what are reliable sources, as students display an inability to do so (Domonoske, 2016). Teachers may also feel a loss of control as their position as the font of knowledge has been usurped with students able to find other sources online to question and doubt what their teachers say.

In the face of this, it is natural for teachers to fear loss of control in the classroom as well as a loss of their fundamental role in the classroom. The comments from many of the teachers echoed not a dislike of technology or unwillingness to learn, but almost a cry for help in navigating this complicated new world. Technical support is a way in which teachers can feel more confident using technology. Many of the teachers expressed a lack of technical support as a reason that they did not use technology. On the other hand, the students could not recall many situations when technology had impeded their learning. None of them were critical of teachers' lack of technical skills. One of them recounted a situation in Australia when the Internet had not worked in the classroom. The teacher was very frustrated, but the student was laughing. It appears that a big difference between students and teachers is that students were not concerned by technology failures. This may be an area in which there is a generational gap. Most teachers have grown up with very stable forms of technology such as television or radio, but students are accustomed to technology failures and possibly don't even regard it as a failure. At this point it should be added that teachers in higher education are in a fairly unique position in that classrooms and equipment are used by a variety of teachers. This means that not only do teachers need to be familiar with a variety of hardware and software, but there is a high possibility of the previous teacher changing a setting so that the equipment no longer works in the same way that it did in the previous lesson.

Faculty development is also needed to help teachers understand the potential of technology and how their role is changing. Two of the teachers spoke of wanting to retain the human relations aspect of teaching. They did

not want teachers to be replaced by robots because education was about so much more than just exchanging information. The T_3 Framework of technology use (Magana, 2017) emphasizes that there are levels of technology use; Translational (Saving time), Transformational (Flipped Classrooms), Transcendent (Changing the way we perceive knowledge). Various experts have acknowledged that technology in education at present is mainly being used for fairly superficial uses rather than a genuine disruption of the status quo (Selwyn, 2016). Biesta (2017) describes the role of a teacher as creating independent individuals, who can exist in the world. In order to do this, teachers need to rethink their teaching style and take part in professional development in new theories of learning and new styles of education.

There is no easy solution for teachers to feel in control of the classroom, but when teachers spoke of situations with reliable technical support they were more likely to take risks and try using technology in the classroom than situations without technical support. Teacher 1, who was very actively using and researching educational technology also stated that they wanted someone to introduce the latest ideas and offer possible solutions to tasks the teacher wishes to accomplish. Universities need to acknowledge this and possibly rather than investing in hardware and software there needs to be more investment in professional development and support. Many countries have been investing in Learning Technologists, Instructional Designers or other staff to bridge the gaps between the computer specialists and teachers. This is a job that does not seem to exist in Japan.

> Learning technology is the broad range of communication, information and related technologies that can be used to support learning, teaching, and assessment. Learning technologists are people who are actively involved in managing, researching, supporting or enabling learning with the use of learning technology. (Association for Learning Technology, 2017)

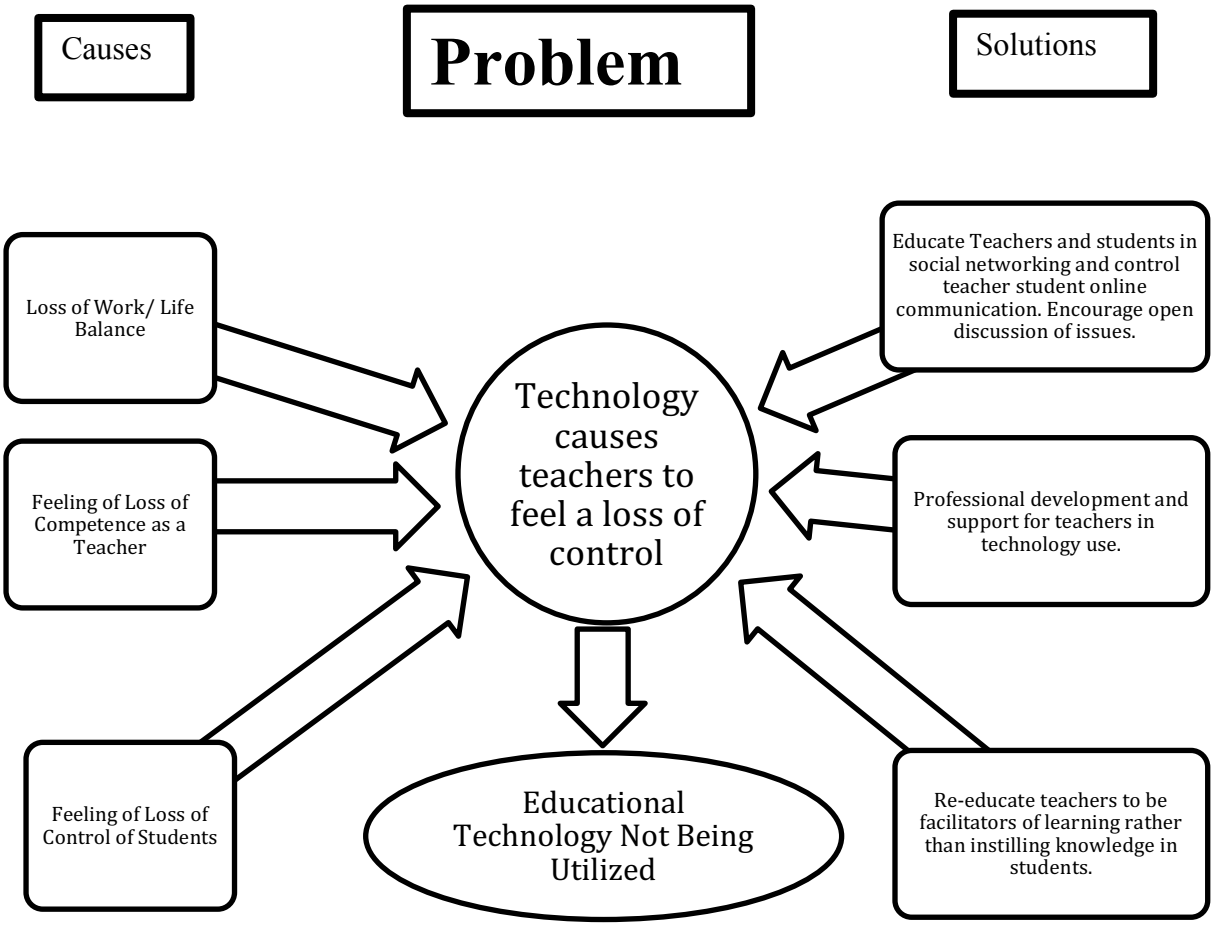

Figure 1: Causes and Solutions for Teachers' perceived loss of control

6.3.3 Balance of power shifting from academics to administration.

Some of the teachers spoke of a shift of power in higher education. This is causing stress in university life in many parts of the world. In the UK, the number of non-academic staff at institutions of higher education now exceed the number of academic staff (Taylor & Underwood, 2015). McElroy (2017) cites a similar pattern in the USA with the number of administrative hires increasing 50% faster than classroom instructors between 2001 and 2011. Teachers are now being assessed using criteria created by non-teaching staff. Trying to measure teaching through student achievement on measurable tests or through student evaluation has made the teacher a slave to student needs (Hornstein, 2017). Technology is one area in which teachers can be monitored and controlled. Although the data suggests that this has not been a large problem in Japan yet, with a number of teachers acknowledging that although the university intranet could monitor how many hours they

spend on campus, this data has not been abused and there is still a sense of trust between most of the teachers and the administration. Even so, the way in which technology is introduced makes many teachers feel a loss of control through having new technology forced on them. In addition, promotion in most universities in Japan and around the world is based on research quality, rather than teaching excellence, thus teachers do not see technology aiding them in gaining promotion.

6.3.4 Teachers referring to themselves as luddites and old-fashioned. One of the most interesting findings was that despite numerous teachers referring to themselves as 'Luddites', old-fashioned and backward, every teacher interviewed was in fact using technology in their classroom in a variety of ways. Added to this, all of the teachers expressed eagerness to learn new technologies and to develop their skill at incorporating technology in the classroom. This is also probably a way in which teachers are trying to find excuses to keep control of their style of teaching.

Although half of the teachers referred to themselves in self-deprecating ways as 'Luddites', 'old fashioned' and 'conservative', their other comments do not seem to support this. A Luddite is someone who rejects technology. The teachers interviewed were all using technology effectively in their classes and developing creative ways to use technology with very little support from technical staff. Most of the teachers also said that they wanted to learn more about technology and welcomed opportunities to expand their knowledge. Their comments were all tempered with a practical knowledge of the limitations of the institution, and a knowledge of pedagogy that put learning first and technology as a tool to aid that. This refutes claims that teachers are intransigent and unwilling to learn new technology, as indicated by comments from the OECD (2016, p.73) and points to a different conclusion that teachers are very knowledgeable about technology, but need and want ongoing training in educational technology.

6.3.5 Old-fashioned as a matter of pride. Additionally, some of the teachers who referred to themselves as old-fashioned or analogue were doing

so as a matter of pride. Teacher 8 referred to themself as a ‘Showa person’, which was the period of Japanese history after the second world of incredible growth and prosperity in Japan. This period is thought of as a halcyon period in Japan and referring to yourself as a ‘Showa person’ is really indicating that you see yourself as hardworking. Ironically it was also a period of technical innovation in Japan with the creation and growth of companies such as Sony, Panasonic, Toshiba and Hitachi. Teacher 8 also referred to themself as an analogue person as opposed to a digital person, this may also be an indication that the teacher was proud of a simpler time, when the role of teachers was clearly defined, and generally teachers were highly respected. Analogue technology was also far more stable and reliable to use in the classroom. The current era with digital technology has become less reliable and more complicated with teachers called ‘facilitators’ of learning causing the relationship between teachers and students to be less well defined. Biesta (2011) identified three purposes of education; learning skills, socialization and development of independence from the teacher. As Biesta (2011) suggests teachers must now fulfil a new role. Teachers have to learn a new skillset to guide students through the vast quantity of information online so that they can access what is important, as well as decide what they want to know. He also identified socialization as one of the purposes of education. Although in the past this might have meant socializing students into current styles of society and behaviour, with the rapidly changing world due to digital technology, teachers need to introduce students to a new reality. Teachers may feel unsure of this new reality themselves and have difficulty introducing it to students. As Teacher 5 stated, the role of university education should not be teaching skills, but teaching students how to learn. This may correspond to what Biesta (2011) refers to as subjectification, which is the third purpose of education. In the world of digital technology teaching students how to learn is very different than it was when most of the teachers were at university. Biesta (2017) encourages teachers to make students subjects of their own learning, in order to become what he calls a ‘grown-up’. This does not mean reaching adulthood, but rather developing a sense of where they exist in the world. This requires self-motivated learning and knowledge of where to find information.

Thus, teachers identifying themselves as old-fashioned is probably not a simple fact of teachers considering themselves to be lacking in competency. It is more likely to be a mixture of self-protection from the avalanche of advice and predictions on the benefits of the new digital age and how it can benefit education, and an understanding that there are some very good aspects of the pre-digital age, which should be preserved. The teachers interviewed were all highly respected and experienced teachers with a vast depth of knowledge about the complexities of education and learning. They were using technology in ways that they thought would benefit students, but wanted to retain the essence of what they had discovered over many years were effective ways for students to learn.

6.3.6 Students' perception of control. Although the students did not mention control explicitly it was very interesting to see their perception of self-access or self-motivated learning compared to being told to study autonomously. Two of the students talked of the ways in which they use their mobile phones on a daily basis to study. One was surfing the Internet to find sites to listen to English. Another mentioned watching various YouTube videos in English. Some of the other students were very keen to try the learning applications which were introduced to them to during the interview, even contacting me after the interview for more recommendations. On the other hand, when students were asked to listen to TED talks as one of their class assignments, they did not want to do so, and stated that they did not want to use up their limited data plan to study online. In the former situation students were not obligated to use technology, they could maintain control over their technology use. It also seems that students are eager to study autonomously when the application and software are free, but if they need to pay money, then two of the students stated that they would rather buy a book. This is another indication that the Internet is something that the students want to be free in all senses of the word.

This has very important implications for teachers and curriculum developers. Students may need classes explaining the benefits of self-access online learning as well as support for students to help them find good sites

and software, but careful consideration should be made before making it part of the course grade. Possibly technical support and self-access centres provide a way for motivated students to use technology outside the classroom, but do not solve the problem of motivating all learners.

6.4 Potential for Technology to Introduce New Pedagogies

Although it appeared that all teachers feared loss of control in some way, many of the teachers also expressed positive attitudes to technology such as enabling more collaborative styles of learning and bringing culture into the classroom, making classrooms alive and interesting. This seems to fit in with the paradox of technology usage. Teachers and students had some reservations about educational technology, but they could also sense the huge potential it might hold.

6.4.1 Technology enabling social constructivist styles of learning. A number of teachers spoke enthusiastically of the potential for technology to make classrooms more engaging for students. Two of the teachers said that looking for good material took time, but they did not begrudge this time as it made the classes more active and interesting. In the past teachers may have spent time learning content knowledge themselves in order to share this with students. That time is now spent with teachers finding resources that students can access to learn themselves. There has been a subtle shift from teaching to learning. Social Constructivism states that students learn through interacting with other learners to create new knowledge together (Merriam, Caffarella, & Baumgartner, 2007). Memorization is also no longer needed. It is becoming increasingly clear that by students using online resources they can access information to share with other students and also the teacher, leading to social-constructivist styles of learning. There are also opportunities for students to interact online through blogs and social media.

6.4.2 Introducing culture in language learning. Technology can also bring the outside world into the classroom. There have been various definitions of culture, but overall everyone agrees that culture needs to be incorporated in language teaching. For example, “learning a language in

isolation of its cultural roots prevents one from becoming socialized into its contextual use." (Seelye, 1997, p.10). Brown (2007) states that it is impossible to separate language from culture without losing the significance of one or the other. When teaching a language outside the native country of that language it can be very difficult to incorporate culture in the language classroom. In a recent study Dema and Moeller (2012) state that technology is a way that culture can be brought into the foreign language classroom. This is particularly necessary in the case of English, where there are so many different cultures, which count English as their native language. Even if English were being taught in the UK, it would be sensible to incorporate North American culture and if possible other varieties of English into the classroom. By using technology, culture can be introduced with multimedia combining images and sounds (Dema & Moeller, 2012). This can create a richer flavour of the culture leading to deeper understanding than a textbook alone. Levy (2009) suggests that "simply accessing an L2 Web site can expose learners to numerous aspects of the target culture" (p. 776). As the vast majority of websites are still in English even logging into a website can be a cultural and language learning experience.

The teachers and students were very open to these possibilities. Two of the students stated that they used their mobile phone on a daily basis to connect with the world outside Japan, through watching podcasts, news programs and YouTube videos. Unfortunately, there seems to be a threshold level of English ability before students appreciated this. The two students who were most active using digital technology to listen to and watch English were also the students, who were most fluent in English. It is possible that by listening they became fluent, but both of them stated that they did not start doing this until after they had studied abroad. All of the teachers admitted to using technology in some way to introduce culture into the classroom. For some teachers this was through DVDs, but for most teachers it was through online video material. There seems to be a clear indication that technology can enliven the classroom, whilst introducing students to world cultures.

6.5 Potential to Study 'Anytime, Anywhere, Any Pace'

Various researchers and commentators have stated that one of the major advantages of technology and specifically mobile technology is that it enables students to study 'anytime, anywhere, at any pace.' The results of this study from the point of view of various teachers and students was that there are limitations, and although some forms of study can be done on the train or in more informal situations; when study needed more concentration, a quiet place was necessary. Student 6 commented that she would only watch a video on the train, but anything important she would do in her bedroom at home. Teacher 4 also commented that if a task was cognitively taxing, a quiet atmosphere was probably necessary, making the train an inappropriate place to study. This was further supported by other students stating that they might read a little on the train, but usually just checked social media or played games on their mobile device. This may also be due to social norms where mobile phone usage in the train is frowned upon, and text messages being very short, requiring little concentration (Kukulska-Hulme & Pettit, 2009). This indicates that although mobile technology has the potential for providing new places to study the reality is that most students still study in traditional places such as the library or their bedroom. Technology has not significantly changed the place or time in which students study, which is important for teachers to understand when setting assignments. Anything requiring a high level of concentration will probably not be accomplished whilst commuting. These results possibly get to the heart of my initial question of why I saw people using mobile devices in every situation, but their use for education was still limited. The way that people use mobile devices require limited concentration and attention span, although there are of course exceptions and some people are able to focus and concentrate in any environment.

6.6 Summary of Emergent Theory

The theory to emerge demonstrates that teachers' fear of loss of control impacts their use of technology in many ways. It causes teachers to fear being unable to conduct their class through technology failure or being seen as technologically incompetent in front of their students. It also causes

teachers to fear losing control of their private time and ability to separate their public and private personas. In addition, some teachers fear that technology may give the university administration control over them. Students did not have the same concept of loss of control, but they did not display the same level of enthusiasm for educational technology. Teachers were keen to try new technologies and despite claiming to not use technology, they were implementing educational technology in many new and innovative ways, encouraging social constructivist styles of teaching and incorporating culture in the language classroom. In addition, it appears that although online learning may alter the nature of location of learning, in campus settings students still prefer to engage in learning in traditional places, such as their bedroom or a library rather than on the train whilst commuting.

6.7 Drama Theory as a Supplement to Technology Implementation

Although my use of Grounded Theory has made apparent a new theory of why technology is not being used in education as much as in other spheres of life, it has not answered the question of how this might be changed. The data led me to Drama Theory (Howard, 2009) for this reason, to help analyse the perceptions and actions of the various stakeholders in educational technology. In the case of educational technology, the players are defined as the administration, the teachers and the students. Teachers have been further separated into technology averse faculty and technology innovating faculty. Although there may be more players, such as technology specialists and technology companies, these will be ignored in order to focus on the problem in a more concentrated manner. I have set out here the most obvious dilemmas stemming from the data:

Administrative dilemma
- Whether to invest in technology in an institution?
- What type of technology to invest in?

Teacher and Student dilemma
- Whether to use technology for learning?
- How to use technology for learning?

Teacher dilemma
- How to best achieve desired learning outcomes?
- How to create engaging learning experiences?

Possible players	Possible dilemmas	Decisions based on dilemmas
Administration	If technology is bought will it be used?	If teachers can be trusted to use technology it may be invested in.
	Will technology raise learning outcomes?	If learning outcomes can be guaranteed to be improved due to technology it may be invested in.
	Will it increase marketing potential of the university?	If the university will get increased funding and raised admissions or ranking, technology may be invested in.
All teaching faculty	Will technology help students to achieve their desired learning outcomes?	If evidence of improved outcomes is shown then teachers will engage in educational technology.
	Will technology cause my work-life balance to be upset?	If teachers could separate their professional and personal email and social media, they could avoid being contacted outside working time.
Technology averse faculty	Will the technology be easy to use and will I be trained and supported?	If university provides technical support, or technology is simple and robust it may be used.
	Is technology use mandatory?	If technology use is optional or flexible it may be used. This is counter intuitive, but mandatory enforcement seems to lead to surreptitious avoidance.
Technology innovating faculty	Why do we not have new technology?	If suitable hardware and software is invested in, technology will be used.
	Why am I not supported in technology innovation by the university and teachers?	If teachers are given freedom to use technology how they want to they may use it.
Students	How much will I have to pay for technology?	If the university provides sufficient Wi-Fi and charging facilities, students may use it.
	Will technology improve my learning outcomes?	If evidence is shown of improvements to learning students may be motivated to spend time using technology outside classroom.

Figure 2: Players, Dilemmas and Decisions in Drama Theory

Considering these dilemmas, and decisions that may be made based on these dilemmas, it is clear that communication between administration, teaching faculty and students is the most important step. It is necessary for teachers to guarantee that they will use technology effectively in order for large investments to be made. This necessitates teaching faulty sharing their needs and hopes for technology. However, as Teacher 1 noted, they need someone to tell them what is available. Sometimes teachers don't know what is possible with technology. This necessitates clear professional development for teachers. This professional development can involve technical training, but also developing new pedagogies enabled by technology, such as flipped classrooms. The teachers also need to know that there will be technical support in order for them to use technology. In all situations technology investments should be based on sound pedagogical knowledge, using technology for technology's sake will not bring about a good outcome for students, teachers, or the administration. Investing in technology without knowing if it will improve learning outcomes will nearly always be a failure. Basing technology investments on research into learning outcomes, and sharing this research with all stakeholders, will probably bring about the best results for all players. There are also other factors such as teachers believing in the time-benefit payoff. If teachers need to spend extra time due to technology, will it have a significant benefit to themselves and students? Students also need to believe that the use of technology will not incur a significant cost to them, either in terms of having to buy new devices or larger data packages, or in terms of lost usability in their private life, due to data having been used for learning purposes.

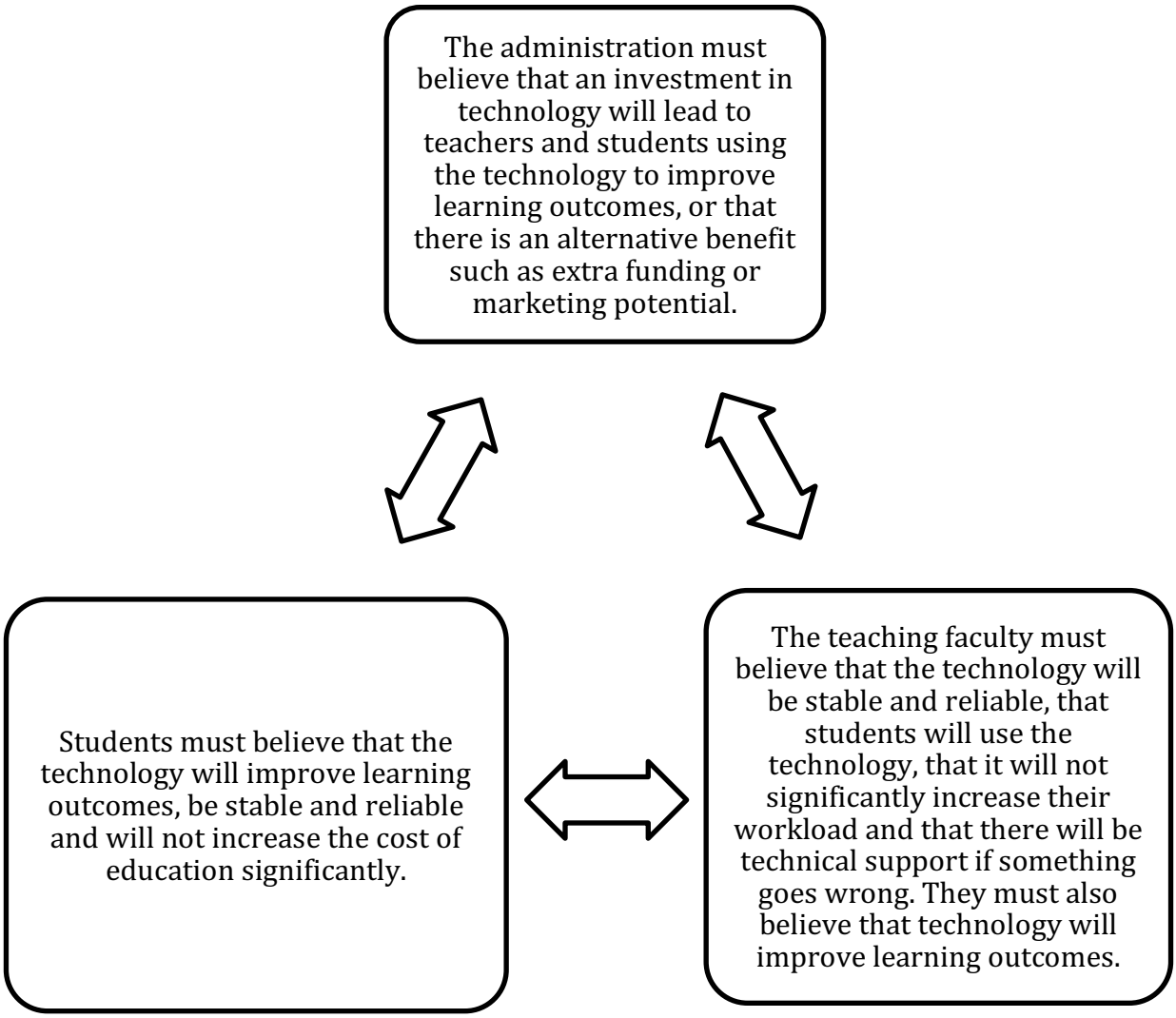

Figure 3: Dialogue necessary for trust in Drama Theory

In order for these dilemmas to be resolved the administration either needs to negotiate an agreement from the teaching faculty to use the technology, or implement mandatory usage, similar to Howard's 'Unwilling Threats and Promises' (1987, p. 12). The administration also needs to get evidence that the proposed technology improves learning outcomes or marketing. Teachers need to understand the effectiveness of new pedagogies and to negotiate with technology specialists to ensure that the technology is stable. They also need assurance from the administration that technical support will be offered to teachers to prevent increased workload and wasted class time if technology does not work. Students need assurance that time

spent learning through technology will lead to a significant learning outcome. They also need assurance from the administration that Wi-Fi, software, and hardware costs will be covered by the university.

Howard (1987) states that possibly the only way to move from a given scenario is for all players to change their preferences in cooperation. A cooperative solution is difficult to achieve due to the irrational decisions made by various players based on emotions of fear of lack of technical ability on one side and possibly over-enthusiasm for technology on the other. Cooperation needs to be based on trust in the administration to provide technical support, trust in evidence of improved learning outcomes from technology-based pedagogies and trust in the teachers and students to use the technology if provided (Howard, Drama Theory and Metagame Analysis, 2009). Bohm (2004) states that for all solutions to problems, dialogue is necessary, but he further explains that dialogue refers to participants really listening to each other. It is not possible unless all stakeholders come to the table prepared to achieve the best outcome for everyone, rather than achieving the best outcome for themselves. Discussion and negotiation often centre around the concept of one party winning. Bohm (2004) considers this pointless as the losing party will invariably leave the discussion dissatisfied and unwilling to cooperate with the decision. What I consider an important factor in this analysis is that within a university there is often no stage of dialogue between administration and teaching faculty, and certainly not students, prior to the decision being made to implement technology. As one of the teachers said;

> “You've got these mad purchases being made, so I think you need to be talking to teachers who know about technology, you need to be talking to the IT people and the people making these decisions - the administration people in the same room, and they so rarely are” (Teacher 3)

Based on drama theory a new style of decision-making process is needed in education incorporating negotiation and agreement, so that everyone feels invested in the decision. Drama theory is effective as it examines each player in detail and can show the connections between the various players.

Previously in the university under analysis, the decision to buy and use technology tended to be top-down with very little discussion between the various players. Although this style of implementation appears to be efficient the ultimate result often ends in underuse of the technology. Including everyone in the decision-making process is time-consuming and often frustrating, but by going through this stage better decisions will probably be made. It will hopefully increase the use of technology with teachers and students feeling invested in the program. In the data from this research, teachers spoke of the technology and learning management systems as outsiders. Anytime people are invested in a system they are more likely to use it.

In conclusion, technology in education is a complex issue with a number of stakeholders. Drama theory allows for dilemmas to be analysed in depth from every point of view in order for a solution to be found that can benefit everyone. In comparison, the other theories of attitude formation help to explain why teachers and students may have developed the perceptions they have, but do not lead to a solution.

6.8 Theory of Technology Implementation

A theory of technology use within this institution has emerged with three main recommendations. Firstly, technology would be used more extensively by teachers if there were some sort of technology support system informing teachers of new types of technology and how to use it as well as trouble shooting when problems occur. Secondly, faculty development and clearer rules on the use of social media and student-teacher communication outside the classroom would help teachers to regain control over their private time and online communication outside what they consider to be working hours. Finally, providing comprehensive Wi-Fi and mobile charging facilities for students is necessary if students are required to use their own devices to study. The monetary cost of mobile data packages made students reluctant to engage in mobile assisted language learning. Although students did not express a need for technological support their apparent lack of knowledge of educational technology applications implied that some support would benefit students.

Chapter 7 Discussion

The introduction of digital technology into education is probably the biggest change in education in the last 500 years. Dewar (2000) found similarities between the advent of the printing press and the introduction of information technology in education. The invention of the printing press had a significant effect on the Reformation and Industrial Revolution. It is Dewar's opinion that digital technology might bring about similar changes on society (2000). Change is always very difficult to adapt to. Kanter (2012) lists ten major reasons that people resist change, the top three are; loss of control, excess uncertainty and decisions imposed suddenly. All of these are applicable to the implementation of educational technology and all of them were mentioned by the participants, although the most important was clearly loss of control in many areas of their life.

7.1 Loss of Control

Although loss of control is one of the main reasons that people resist change (Kanter, 2012), it has not been studied in detail in relation to the implementation of digital technology in education. The findings from this research seem to show that loss of control is a major factor in the lack of adoption of digital technology. Glasel (2018) found that teachers felt that their lack of technical competence would make them unable to control students in the classroom. In addition, teachers felt that students would not be interested in the lesson content if they had access to the Internet during class. This is exacerbated by a feeling that they should be in control of their students' learning, due to a traditional view of education in which the teacher was the giver of knowledge and in control of every aspect of the learning process. Teachers feeling uncertain of their ability to use technology are then over-worked and stressed by their inability to cut off from their working life caused by the connectivity of digital technology. Vostal (2016) states that in the rapidly changing world people are struggling to gain control over their lives. The natural response to this is to resist change, in this case to reject technology. We can see this clearly in Teacher 7, who refused to use the university intranet or learning management system. On the other hand, they

had been taught to use Google docs in another institution and felt confident using this at the university. The only real difference between the complexity of Google docs and the learning management system is that the teacher had been taught how to use one, and it was optional, so they felt in control of it. It can be seen from this example that the situation is not simple. In the data collected all the teachers were using technology in education in one way or another, but they were each negotiating these new methods of teaching in ways in which they felt comfortable. There was definitely a sense from most of the teachers that it was possible to retain the best practices of teaching and incorporate digital technology, rather than implement completely new styles of teaching across the board.

With effective professional development and technical support, teachers do not need to fear that they will lose face by looking incompetent in the classroom. They can trust that if a problem happens a technical specialist will take responsibility for fixing it. Teachers will also feel in control of their lesson being able to trust technology to work.

The loss of control of private time is a serious societal one. This does not just relate to teachers, but institutions can alleviate the stress on teachers by designating in house platforms for communication between teachers and students. There can also be clear guidelines and expectations laid out for students and teachers. As of now there seem to be clear guidelines as to classroom behaviour, but not out of class time communication. Within society as a whole, worker protection seems to be lagging behind the capabilities of technology. Although many teachers may think they are working a forty-hour work week, this does not include time spent reading and responding to email at home, although Vostal (2016) found through interviews that academics felt that they had extensive temporal autonomy in their work because ICT allows academics to choose when and where they want to work.

7.2 Societal Pressure

As the idea of ‘digital immigrants’ (Prensky, 2001) has become so wide spread it is possible that older teachers feel even more pressure to defend themselves for lack of use of technology. One method of defence is self-deprecation, another is avoidance. Through this data we can see that many of

the teachers referred to themselves as ‘Luddites’ and other self-deprecating terms. It seems to be that many of these older teachers believe in the theory of digital natives and feel that they are not using technology to the same level as students or younger teachers. This is probably a false impression as the students were not using technology to study. If there is a difference between so called ‘digital natives’ and ‘digital immigrants’ (Prensky, 2001) it is that the students do not feel pressure to use technology any more than they want to. The students did not express an interest in receiving training in the use of technology, even though they obviously did not know what was available to study online. There are a number of possible reasons for this. Firstly, they may consider that they know enough about available resources or more likely they feel that it would be easy to use a search engine to find resources and to learn how to use them. Secondly, they may expect their teachers to inform them of new technology and how to use it. Thirdly, they may just not be interested in educational technology. This might be an apathy to learning or an apathy to educational technology. The first reason points to students being far more self-sufficient and having a more modern perception of learning styles. Students might go out and search for the technology themselves online, whereas the teachers are of a generation where information was given to you and they expect help and professional development.

In addition, once teachers are given top down directions to use new technology, they may use it, but were concerned that their lack of technological competence may prevent them from using it effectively. On the other hand, students felt that lack of ability to use technology was the fault of the technology. Teachers are reluctant to give up their position as ‘the sage on the stage’, they feel that they should not only possess subject knowledge, but that they should also display competence in using technology. People seem to regard technology competence differently to other skills. If a car breaks down people are happy to admit that they don’t know how to repair it and quickly call in a car mechanic, but in the case of technology people feel that they should try to fix the problem themselves.

7.3 Is the Type of Device Important?

The type of digital device used for learning is often differentiated. Within English language teaching there is a field of research called Mobile Assisted Language Learning (MALL), which is usually defined as language learning using tablet computers and Smartphones, although sometimes other small portable digital devices are also included. This is distinct from digital technology use within Computer Assisted Language Learning (CALL) laboratories, which are usually classrooms with fixed computers, often desktop computers, although sometimes laptop computers. The computers usually rely on a fixed internet connection not Wi-Fi. In this research, it was obvious that the students relied very heavily on smartphones. The use of these mobile devices comes with unique problems, firstly battery usage, and secondly data usage when students are out of Wi-Fi areas. The infrastructure of the university, such as Wi-Fi speed and coverage, becomes very important.

7.4 Answers to the Research Questions

1. Why given the ubiquity of digital technology is its adoption in education limited, especially in Japan?

There are a number of possible answers to this question. One of them is that the style of implementation is at fault. With discussion and cooperation between the stakeholders, technology may be implemented more widely and used more effectively. Accusing teachers of not wanting to use educational technology is too simplistic, the reasons that technology is not incorporated in learning are very complicated and multifaceted. Another is that technology is not of substantial benefit to education and that this is implicitly understood by experienced teachers. Educational technology is being encouraged by non-teachers with an assumption of the benefits without a deep knowledge of pedagogy.

2. How can the low rate of adoption of digital learning be explained through teacher and student attitudes?

Perceptions of teachers and students to technology are generally positive. Although the teachers sometimes have negative perceptions towards the stability of the technology and support that will be available in the case of problems. Low adoption is generally caused by lack of knowledge of the possibilities of educational technology and lack of training on new technologies. Teachers were very conscious of appearing competent and technology failures could make them feel incompetent, which was a deterrent to technology use in the classroom.

3. To what extent might the reasons for non-adoption of digital learning inform a judgement as to the value of digital learning?

Non-adoption is based mainly on the teachers' perceptions of student outcomes. All of the teachers were dedicated to improving student outcomes, their decision to use digital technology was based on whether it would assist students. This was a very positive outcome – the teachers wanted their students to learn and were happy to use technology if it aided students. Teachers wanted to use technology when and where it promoted learning but were aware that technology was not always beneficial to learning.

7.5 Framework for Technology Implementation in Universities

Through this research it has become apparent that the system of implementation of technology at the institution being studied is faulty. Teachers and students are not using technology for its optimum potential due to the incorrect technology being provided, lack of knowledge of the technology available, and inadequate training and support in using the technology. It is also clear that technology can aid education in certain ways, but most teachers still believe in teaching as a craft that requires more than the correct hardware or software. Existing frameworks for technology implementation such as TAM2 (Venkatesh & Davis, 2000), TPACK (Mishra & Koehler, 2006) and T_3 Framework (Magana, 2017) offer some insights into why technology is implemented and the ways in which it can be implemented, but they do not offer a clear framework into the effective implementation of technology in education. TAM2 (Venkatesh & Davis, 2000) is the closest to

explaining how technology might be implemented by explaining that ease of use and usefulness are central factors. The others explain that technology can be implemented in different ways, but as this research found that a fear of loss of control due to technology was deterring teachers from using technology, then control should be a central factor in the results of this research.

The following framework is a suggestion of how the process of technology implementation may be implemented providing all stakeholders with the maximum control to improve technology use in education.

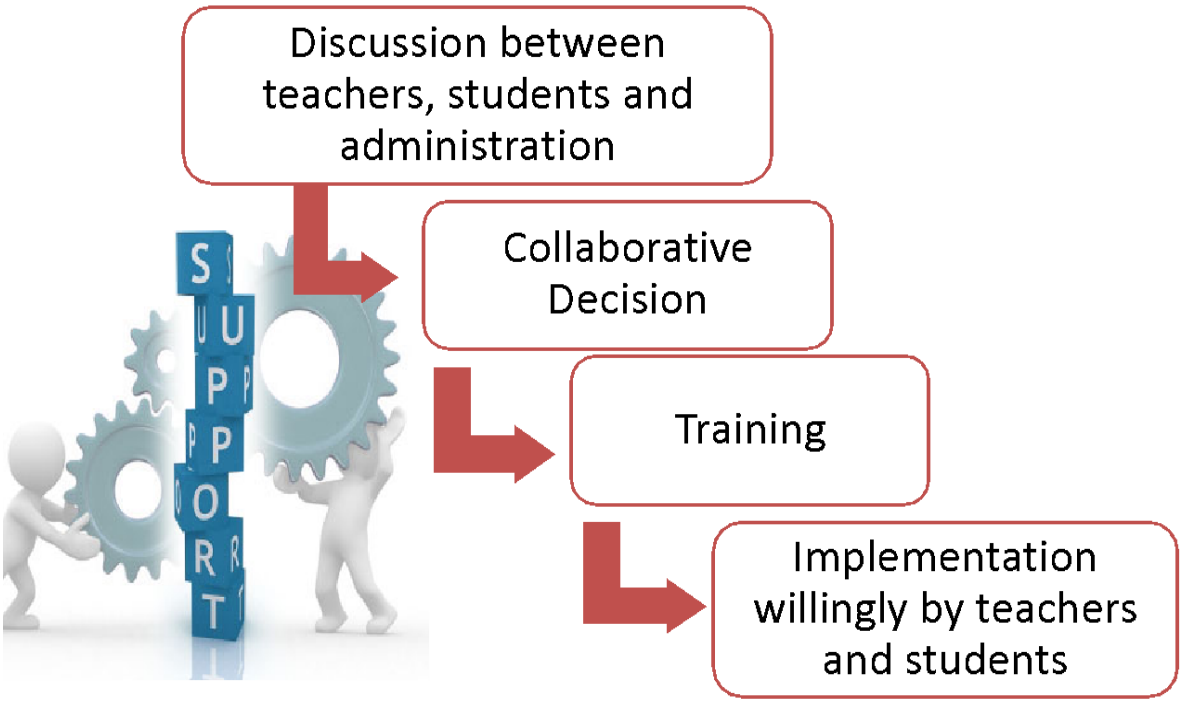

Figure 4: Framework for Technology Implementation in Education

Figure 4 demonstrates a way in which technology might be implemented effectively. Firstly, the university administration needs to bring together a diverse group of people to openly exchange opinions on technology; sharing their needs and concerns. Through this dialogue a decision can be made as to the best method of investment and implementation. Then before the investment is actually made all stakeholders receive training. This training might be basic technical skills to use the equipment, it might also involve advice on maintaining privacy and control within a digitally connected world or advice on the potential uses of educational technology. After this training has been carried out it would be

hoped that the implementation of technology would be made through a group decision with all stakeholders having agreed on a course of action. It should also be an iterative process with changes being made at every step based on new realizations of needs and problems. In the long term there needs to be on-going support and retraining, but hopefully there will be a sense of trust built up through the initial dialogue, which will make this process effective.

Although this bottom up process is time consuming, in the long run it would prevent wasteful purchases being made and hopefully ensure that teachers and students retain a sense of control whilst implementing technology for education.

The results of this research indicate four areas which need to be addressed in order to improve technology within the institution studied. Firstly, a needs analysis should be conducted with teachers and students. Secondly, a technology committee is needed. Thirdly, a technology support center needs to be set up and finally clearer rules and advice on social media usage are necessary.

Initially annual focus groups of teachers and students are necessary to produce a list of needs to be proposed to the Technology Committee. The technology committee might be set up with a collection of teachers, technology specialists and administrative budget managers, so that diverse voices can be heard. The committee should aim to engage in what Bohm (2004) refers to as dialogue in order for all opinions to be heard and valued. The committee should discuss which of the focus group needs could be met within the university budget. Technology specialists could advise on how the needs might be met through technology purchases. After a decision is made the technology committee could arrange quotes and suggestions for purchases. Once this has been decided there needs to be a series of faculty technology workshops. As demonstrated through the data many of the teachers stated that they had attended only one initial workshop, but then could not implement the technology successfully in their classroom. This indicates that follow up workshops are needed for all teachers to be able to use the technology effectively. This progression is shown in figure 5.

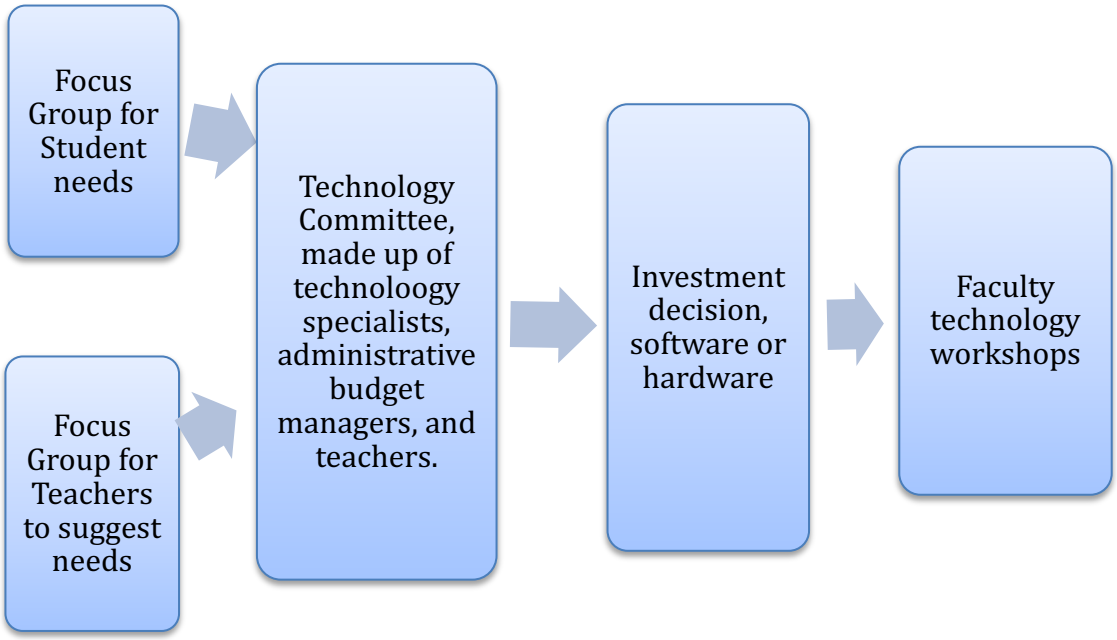

Figure 5: Technology Committee

It was also apparent from a number of teachers that they did not know who to consult when the equipment in the classroom did not work. There is a clear need for a technology support center in charge of upkeep of equipment, real time support for teachers who have problems, advice for teachers wishing to use educational technology and support for students wishing to use technology for self-access learning. Although students in the interviews did not state a need for a support center, as evidenced by the fact that students did not know how to use a variety of educational technology, it is probably still necessary. This is show in figure 6.

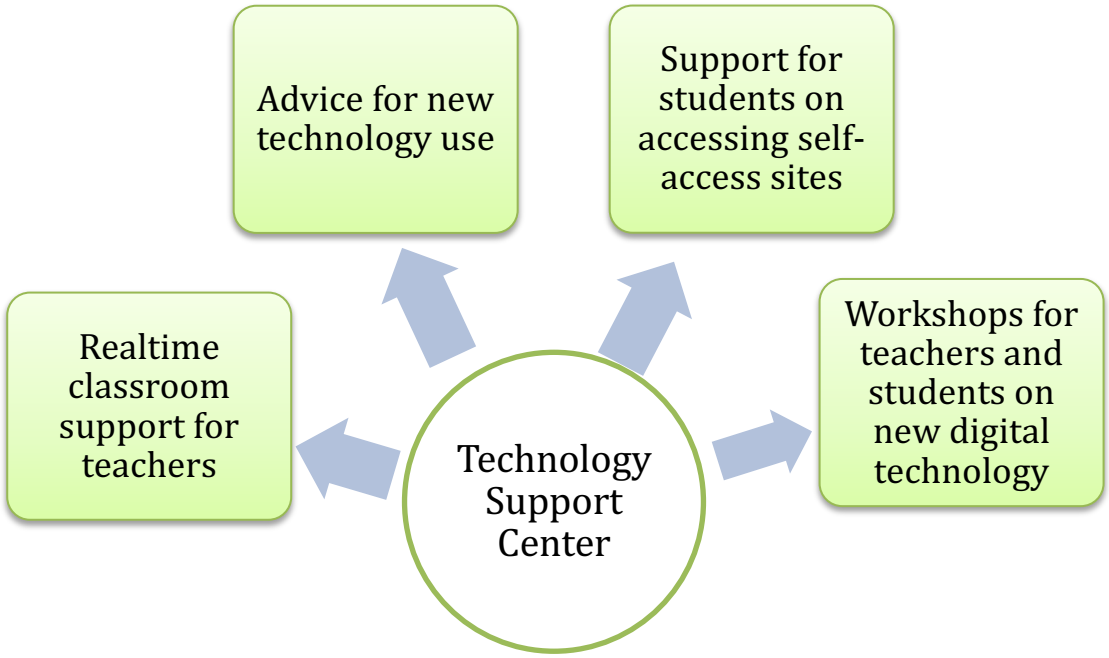

Figure 6: Technology Support Centre

Finally, it was clear that many of the teachers felt that technology was impinging on their personal time, but were unsure how to control this. Clear advice and rules may be helpful. Although research has shown mixed findings on whether setting strict rules on social media usage within educational institutions, it seems clear that consciousness raising activities on some of the dangers of social media is beneficial (Sugimoto et al., 2015; Chretien et al., 2011). This could take the form of workshops for teachers and students providing the open dialogue on how to use social media in education as recommended by Sugimoto et al. (2015).

Chapter 8 Conclusions

When I started this thesis, I came at it with an almost evangelical zeal for educational technology. Seeing all the technology around me and the myriad ways in which it was being used in every aspect of daily life I thought it was obvious that it should be used in education. Without much thought I started trying to think of ways in which technology could be incorporated in education, at first through mobile technology and then technology in general. As I have moved through this journey it has become more and more apparent that my assumptions are the same assumptions being made by numerous technology

companies, ministries of education and schools (OECD, 2016; OECD, 2015; UNESCO, 2012). Through this research it became apparent that these assumptions are misguided, and even erroneous. It was only through the in-depth interviews that I started to hear the worries and challenges expressed by teachers and students. The teachers were not reluctant to use technology, but they wanted to be in control of the technology rather than having it control them. In this case control does not refer to dominance; it is a subtler sense of control in which the relationships between different people and the relationships between people and technology give a sense of control. If people are 'in control' then all relationships will be balanced. This is why dialogue is vital to allow everyone to maintain a sense of control.

The results of this research seem to show that contrary to most of these assumptions, most teachers, even those who professed to be 'Luddites' or old fashioned, are actually using technology in many innovative ways and would like to use it more if there were technical support allowing them to feel in control of the technology. In many cases in previous research, teachers were blamed for lack of technology use, without listening to the reasons behind technology non-use. I had hoped that grounded theory would give me a way to encourage effective technology use, but I discovered that while it was very informative in identifying the problem and even linking all the threads of comments to make one theory of why technology is not being used in education, it didn't offer any solution to the situation. For this reason, I used drama theory to analyse ways in which greater communication might lead to more effective digital technology implementation. As Teacher 3 says, the various members of the university rarely sit down and talk to each other. Despite the possibility of greater communication than ever before through technology, there is actually a feeling that communication is breaking down everywhere. Although groups are attempting to communicate, they are unable to do so due to confusion leading to frustration and a lack of trust (Bohm, 2004). In reflecting on the confusion surrounding educational technology it seems that a method of systematic discussion and negotiation is needed. Through Howard's (2009) metagame analysis the process of dialogue, negotiation and reconciliation can be clearly outlined. In this paper I have tried to show a pattern of how negotiation might take place within a university, but

in fact it is not simple and the variables are infinite. I have come to see that technology has crept into our lives without being analysed carefully. It is vital for us to see the ways in which technology can impact us for better or worse in order to choose how we wish to use technology to support the vison and mission we have set for our institutions. I am still a firm believer that technology can aid education in many ways, but it needs to be incorporated in ways in which the stakeholders all feel that they have control over what and how they teach, as well as control of the technology itself. This means that teachers, students, institutions, government bodies and technology companies all need to work together, sharing information and negotiating to get the best possible outcome. Unfortunately, dialogue takes time, and technology changes so quickly that everyone feels a need to move at a pace to keep up with changes in technology.

Based on the findings from this research there has emerged a new theory of relations between students, teachers, institutions and technology. There is no evidence that students, the so called ‘digital natives’, are better at using technology than older people, the so called ‘digital immigrants’. Students and teachers have pockets of knowledge, which they are happy to share. Teachers are implementing technology in ways which will support their work and learning outcomes for students. When the technology made classes more active and interesting the teachers were very keen to incorporate it and did not begrudge spending more time looking for good resources or learning how to use software. In addition, teachers were reluctant to use technology when they doubted its reliability and stability. Teachers did not want to waste class time with broken equipment. They wanted to display a level of competence in front of students creating a sense of trust. If teachers felt that they could make their own professional decisions and judgements on how and where to use technology, then teachers were very keen to use technology and spoke positively of wanting to learn more about technology. Despite over half of the teachers describing themselves variously as luddites, old fashioned and conservative, they were all very willing to try new technology and learn new teaching methods.

Many of these barriers to technology use could be overcome through dialogue between administration, teachers, students and technologists. We

are living in a new era of educational technology and although there are problems with incorporating technology in education, there are probably many ways in which technology could enhance learning encouraging social constructivist learning opportunities and globalization through bringing the world into the classroom. In order to realize these potentials, teachers, administrators, technologists and students all need to come together to engage in real dialogue so that all stakeholders can achieve the best outcome. In order to accomplish this; focus groups, a technology committee and comprehensive technical support are all needed. The paradox between the use of technology in society in general and the lack of educational technology is probably due to teachers' fears of not being able to control technology use, but there is still a lot of research which needs to be done as to how and when digital technology is an effective learning tool. We should not adopt educational technology blindly without fully investigating the outcomes from the point of view of every stakeholder.

This study has revealed some important attitudes held by teachers and students, but as it was carried out in a small private women's university with a relatively small number of participants, the degree to which is can be generalized is doubtful. However, it gives clear ideas of areas that could be investigated in more detail in other studies. It also gives very clear indications to the institution in question how digital technology implementation and usage could be more effective.

8.1 Areas for Further Study

It would be useful to expand this research to teachers at larger universities, which have technological support and extensive equipment in the classroom. It would also be useful to interview part-time teachers as they carry out the largest burden of teaching in most universities around the world. Interviewing a wider variety of students, especially those engaged in universities with advanced technological facilities would also expand the understanding of a variety of students. Finally, interviewing more administrative staff and the most senior members of the university to find out how they feel about technology implementation and learning technology would help to understand how and why technology investments are made.

Although this has been a very small sample of teachers and students it has provided some very useful insights regarding perceptions of technology and hopefully will aid the researchers' own university and other universities with technology implementation.

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References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211.

Ally, M. (2009). *Mobile Learning.* Edmonton: AU Press.

American Association of University Professors Research Office. (2017, March). *Resources on Contingent Appointments.* Retrieved September 26, 2017, from American Association of University Professors: https://www.aaup.org/issues/contingent-faculty-positions/resources-contingent-appointments

Angelos, W. M. (2010, December 24). *Beyond Limits: A Tribute to David Bohm*. Retrieved from Waking Up to Alzheimer's : https://www.youtube.com/watch?v=oGyDVF8GrLk

Angrist, J., & Levy, V. (2002, October). Computers, New Evidence on Classroom Computers and Pupils Learning. *The Economic Journal, 112*, 735-765.

Association For Learning Technology. (2017, March 1). *What is Learning Technology?* . Retrieved November 13, 2017, from Association For Learning Technology: https://www.alt.ac.uk/about-alt/what-learning-technology

Bagshaw, E. (2016, April 1). The reality is that technology is doing more harm than good in our schools says education chief. *The Sunday Morning Herald*.

Banaji, S., Cranmer, S., & Perrotta, C. (2013). What's stopping us? Barriers to creativity and innovation in schooling across Europe. In K. Thomas, & J. (. Chan, *Handbook of Research on Creativity* (pp. 450- 463). Cheltenham, UK: Edward Elgar Publishing.

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, N.J.: Prentice Hall.

Barnes, D. M. (1996). An Analysis of the Grounded Theory Method and the Concept of Culture. *Qualitative Health Research, 6*(3), 429–441.

Bassey, M. (1998). Fuzzy Generalisation: an approach to building educational theory. *British Educational Research Association Annual Conference.* Belfast, Northern Ireland: , The Queen's University of Belfast.

Bayne, S., & Ross, J. (2011). 'Digital Native' and 'Digital Immigrant' Discourses: A Critique. In R. Land, & S. Bayne, *Digital Difference. Educational Futures Rethinking Theory and Practice* (Vol. 50, pp. 159-169). Sense Publishers.

Beer, S. (1970). *Cybernetics and Management.* London, UK: John Wiley & Son Ltd.

Belkin, L. Y., Becker, W. J., & Conroy, S. A. (2016). Exhausted, but Unable to Disconnect: After-Hours Email, Work-Family Balance and Identification. *Academy Of Management Annual Meeting Proceedings*, *1.* New York.

Belo, R., Ferreira, P., & Telang, R. (2014). Broadband in School: Impact on Student Performance. *Management Science, 60*(2), 265-282.

Bennett, S. J., Maton, K. A., & Kervin, L. K. (2008). The 'digital natives' debate: a critical review of the evidence. *British Journal of Educational Technology, 39*(5), 775-786.

Bianchi, W. (2008). Education by Radio. *TechTrends, 52*(2), 36-44.

Biesta, G. (2015). What is Education For? On Good Education, Teacher Judgement, and Educational Professionalism. *European Journal of Education, 50*, 75-87.

Biesta, G. J. (2017). *The Rediscovery of Teaching.* New York: Routledge.

Blaxter, L., Hughes, C., & Tight, M. (2006). *How to research* (3rd Edition ed.). Maidenhead, UK: Open University Press.

Bohm, D. (2004). *On Dialogue.* Abingdon, Oxon, UK: Routledge.

British Council. (2004). *A Task-Based Approach*. Retrieved September 16, 2017, from British Council: https://www.teachingenglish.org.uk/article/a-task-based-approach

Brown, H. D. (2007). *Principles of language learning and teaching.* New York, NY: Pearson Education.

Brown, J. (2014). *Mixed Methods Research for TESOL.* Edinburgh, UK: Edinburgh University Press Ltd.

Bulman, G., & Failie, R. W. (2015, October). *Technology and Education: Computers, Software, and the Internet.* Retrieved December 6, 2016, from CESIFO WORKING PAPER NO. 5570 CATEGORY 4: LABOUR MARKETS OCTOBER 2015: www.CESifo-group.org/wp

Burke, W. W. (2017). *Organization Change: Theory and Practice.* Los Angeles: SAGE Publications.

Burston, J. (2013). Mobile-assisted language learning: A selected annotated bibliography of implementation studies 1994–2012. *Language Learning & Technology, 17*(3), 157–224.

Cain, J. (2008). Online Social Networking Issues Within Academia and Pharmacy Education. *American Journal Of Pharmaceutical Education, 72*(1), 1-7.

Charmaz, K. (2014). *Constructing Grounded Theory* (2nd Edition ed.). Thousand Oaks, CA, USA: SAGE Publications Inc.

Chretien, K. C., Farnan, J. M., Greysen, S. R., & Kind, T. (2011, December). To Friend or Not to Friend? Social Networking and Faculty Perceptions of Online Professionalism . *Academic Medicine, 86*(12), 1545-1550.

Clegg, S., Hudson, A., & Steel, J. (2003, Feb). The Emperor's New Clothes: Globalisation and e-Learning in Higher Education. *British Journal of Sociology of Education, 24*(1), 39-53.

Clough, P. (2002). *Narratives and Fictions in Educational Research.* Maidenhead, Berkshire, UK: Open University Press.

Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th Edition ed.). London, UK: Routledge.

Congress, E. (2001). Dual Relationships in Social Work Education: Report on a National Survey. *Journal of Social Work Education, 37*(2), 255-266.

Corbin, J., & Straus, A. (1990). Grounded Theory Research: Procedures Canons and Evaluative Criteria. *Qualitative Sociology, 13*(1).

Cuban, L. (1986). *Teachers and Machines: The Classroom Use of Technology Since 1920.* New York: Teachers College Press.

Cummings, R., Phillips, R., Tilbrook, R., & Lowe, K. (2005). Middle-Out Approaches to Reform of University Teaching and Learning: Champions Striding between the Top-Down and Bottom-Up Approaches. *The International Review of Research in Open and Distance Learning, 6*(1).

Currie, J., & Eveline, J. (2011). E-technology and work/life balance for academics with young children. *Higher Education , 62*, 533–550 .

Czerniewicz, L., & Brown, C. (2012). The Habitus of Digital "Strangers" in Higher Education. *British Journal of Educational Technology, 44*(1), 44-53.

Davis, F. (1989, September). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 319-340.

Deady, R. (2011). Reading with Methodical Perspective Bias: A Journey into Classical Grounded Theory. *The Grounded Theory Review, 10*(1), 41-57.

Del Favero, M., & Bray, N. (2006). The Faculty-Administrator Relationship: Partners in Prospective Governance? *Scholar-Practitioner Quarterly, 3*(1), 53-72.

Dema, O., & Moeller, A. K. (2012). Teaching culture in the 21st century language classroom. *Faculty Publications: Department of Teaching, Learning and Teacher Education, 181*.

Domonoske, C. (2016, November 23). *Students Have 'Dismaying' Inability To Tell Fake News From Real, Study Finds.* Retrieved January 14, 2018, from National Public Radio: https://www.npr.org/sections/thetwo-way/2016/11/23/503129818/study-finds-students-have-dismaying-inability-to-tell-fake-news-from-real

Dweck, C. (2017). *Mindset: Changing the way you think to fulfil your potential.* London, UK: Robinson.

Edley, P. P. (2001). Technology, Employed Mothers, and Corporate Colonization of the Lifeworld: A Gendered Paradox of Work and Family Balance. *Women & Language, 24*(2), 27-35.

Emerling, B. (2015, April 13). *Larry Cuban on School Reform and Classroom Practice*. Retrieved December 16, 2017, from Teachers College Record: http://www.tcrecord.org ID Number: 17931.

Engelbart, D. (n.d.). *Douglas Engelbart Quotes*. Retrieved October 17, 2017, from BrainyQuote.com: https://www.brainyquote.com/quotes/quotes/d/douglaseng100293.html

Evans, G. L. (2013, June). *A Novice Researcher's First Walk Through the Maze of Grounded Theory: Rationalization for Classical Grounded Theory.* Retrieved June 4, 2017, from Grounded Theory Review: http://groundedtheoryreview.com

Fenwick, T. (2016). Social media, professionalism and higher education: a sociomaterial consideration. *Studies in Higher Education, 41*(4), 664–677.

Florida, R., Mellander, C., Stolarick, K., Silk, K., Matheson, Z., & Hopgood, M. (2011). *Creativity and Prosperity: The Global Creativity Index.* The Martin Prosperity Institute, Rotman School of Management, University of Toronto. Toronto: www.martinprosperity.org.

Fox, A., & Bird, T. (2017). The challenge to professionals of using social media: teachers in England negotiating personal-professional identities. *Education and Information Technologies, 22*(2), 647-675.

Furlong, J., & Davies, C. (2012). Young people, new technologies and learning at home: Taking context seriously. *Oxford Review Of Education, 38*(1), 45-62.

Gagnon, K., & Sabus, C. (2015). Professionalism in a Digital Age: Opportunities and Considerations for Using Social Media in Health Care. *Physical Therapy, 95*(3), 406-414.

Gardner, R. C., & Lambert, W. E. (1972). *Attitudes and motivation in second-language learning.* Rowley, MA: Newbury House.

Glance, D. (2015, September 23). *Does Technology in Schools improve Education?* Retrieved August 7, 2017, from World Economic Forum: www.weforum.org/agenda/2015/09/does-technology-in-schools-improve-education/

Glasel, A. (2018, June 28). *6 reasons why teachers don't use technology in the classroom—what can EdTech companies learn?* Retrieved from The Edtech World: https://medium.com/the-edtech-world/resistance-tech-classrooms-

Glaser, B. (2001). *The Grounded Theory Perspective: Conceptualization contrasted with description.* Mill Valley, CA: Sociology Press.

Glaser, B. G., & Strauss, A. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research.* Chicago, IL: Aldine Publishing Co,.

Goldberg, A. K. (2007, August). *Teaching Without Tools: A Case Study of Part-time Faculty Perceptions and Experiences Regarding Teachnology Training*. (Unpublished Doctoral Dissertation) Northern Arizona University, Arizona, USA.

Gorai, Y. (2017, April 22). *Three Reasons Why Japan Is Falling Behind in Mobile Commerce*. Retrieved August 17, 2017, from Euromonitor International: http://blog.euromonitor.com/2017/04/three-reasons-why-japan-falling-behind-mobile-commerce.html

Goswami, A., & Dutta, S. (2016). Gender Differences in Technology Usage - A Literature Review. *Open Journal of Business and Management*, 51-59.

Goulding, C. (2002). Grounded Theory: Evolutionary Developments and Fundamental Processes. In C. Goulding, *Grounded Theory* (pp. 38-55). London, UK: SAGE Publications Ltd.

Gregg, M. (2011). *Work's Intimacy.* Cambridge: Polity.

Gudykunst, W. (1997). Cultural Variability in Communication : An Introduction. *Communication Research, 24*(4), 327-348.

Hall, R. (2011, November). Revealing the transformatory moment of learning technology: the place of critical social theory. *Research in Learning Technology, 19*(3), 273-284.

Hamersley, M. (1990). *Reading Ethnographic Research: A Critical Guide.* London, UK: Longmans.

Hattie, J., & Yates, G. (2014). *Visible Learning and the science of how we learn.* Abingdon, Oxen, UK: Routledge.

Heinz, M., Martin, P., Margrett, J. A., Yearns, M., Franke, W., Yang, H., & Chang, C. K. (2013). Perceptions of technology among older adults. *Journal of Gerontological Nursing, 39*(1), 42-51.

Helsper, E. J., & Eynon, R. (2010). Digital natives: Where is the evidence? *British Educational Research Journal, 36*, 503–520.

Hodges, L. (2006). Preparing Faculty for Pedagogical Change: Helping Faculty Deal With Fear. In S. Chadwick-Blossey, *To Improve the Academy, Resources for Faculty, Instructional, and*

OrganizationalDevelopment (Vol. 24). Bolton, MA: Anker Publishing Company.

Holmes, R. (2016, November 28). We let technology into our lives. And now it's starting to control us. *The Guardian*.

Hornbostel, V. (1955). Audio-Visual Education in Urban School Systems. *Educational Technology Research and Development, 3*(3), 206-212.

Hornstein, H. A. (2017, March 20). Student evaluations of teaching are an inadequate assessment tool for evaluating faculty performance. *Cogent Education, 4*(1).

Howard, N. (1987). The Present and Future of Metagame Analysis. *European Journal of Operational Research, 32*, 1-25.

Howard, N. (2009). Drama Theory and Metagame Analysis. In K. W. Hipel, *Conflict Resolution* (Vol. Volume 2). EOLSS Publishers Co Ltd.

International Telecommunication Union (ITU). (2016, July 16). *ICT Facts and Figures 2016*. Retrieved January 1, 2017, from Digital Opportunity Index (DOI): http://www.itu.int/ITU-D/ict/doi/index.html

Johnson, D. (2013). Technological Change and Professional Control in the Professoriate. *Science Technology Human Values, 38*(1).

Jones, C. (2012). Networked Learning and digital technology. *8th International Conference on Networked Learning*, (pp. 456-463). Maastricht.

Kanter, R. M. (2012, September 25). *Ten Reasons People Resist Change SEPTEMBER 25, 2012.* Retrieved January 18, 2018, from Harvard Business Review: https://hbr.org/2012/09/ten-reasons-people-resist-chang

Katz, D. (1960, January). The Functional Approach To The Study Of Attitudes. *Public Opinion Quarterly, 24*(2), 163–204.

Kinman, G., & Jones, F. (2008). A Life Beyond Work? Job Demands, Work-Life Balance, and Wellbeing in UK Academics. *Journal of Human Behavior in the Social Environment, 17*(1/2).

Kobe Shoin Women's University. (2014). *Kobe Shoin Women's University.* Retrieved July 18, 2014, from General Information.

Kukulska-Hulme, A., & Pettit, J. (2009). Practitioners as Innovators: Emergent Practice in Personal Mobile Teaching, Learning, Work and Leisure. In M. Ally, *Mobile Learning* (pp. 135-155). Edmonton: AU Press.

Laws, K., & McLeod, R. (2004). *Case Study and Grounded Theory: Sharing Some Alternative Qualitative Research Methodologies with Systems Professionals.* Retrieved June 19, 2017, from www.systemdynamics.org/conferences/2004/SDS_2004/PAPERS/220MCLEO.pdf

Learning A to Z. (n.d.). *The Effectiveness of Reading A-Z and Raz-Kids*. Retrieved August 18, 2015, from Learning A to Z: https://www.raz-kids.com/main/AboutRazKids/

Lee, J., Cerreto, F., & Lee, J. (2010). Theory of Planned Behavior and Teachers' Decisions Regarding Use of Educational Technology. *Educational Technology and Society, 13*(1), 152-164.

Levy, M. (2009). Technologies in use for second language learning. *e Modern Language Journal, 93*, 769-782.

Li, X., & Yang, X. (2016). Effects of Learning Styles and Interest on Concentration and Achievement of Students in Mobile Learning. *Journal of Educational Computing Research , 54*(7), 922 - 945.

Lortie, D. (2002). *Schoolteacher: A Sociological Study* (2nd Edition ed.). Chicago: University of Chicago Press.

Losh, E. (2014). *The War on Learning- Gaining Ground in the Digital University.* Cambridge, Massachusetts: MIT Press.

Luhmann, N. (2008). *Risk: a sociological theory.* New Brunswick: Aldine Transaction.

Magana, S. (2017). *Disruptive Classroom.* Thousand Oaks: Corwin, A SAGE Publishing Company.

Martin, J. (1990). Rethinking feminist organizations. *Gender and Society, 4*, 182–206.

Maxwell, J. (1992). Understanding and Validity in Qualitative Research. *Harvard Educational Review, 62*(3), 279-300.

Maxwell, J. (2013). *Qualitative Research Design* (3rd ed.). Thousand Oaks, CA: Sage.

McElroy, W. (2017, June 16). *Administrative Bloat on Campus: Academia Shrinks, Students Suffer.* Retrieved January 7, 2018, from The James G. Martin Center for Academic Renewal: https://www.jamesgmartin.center/2017/06/administrative-bloat-campus-academia-shrinks-students-suffer/

McKnight, K., O'Malley, K., Ruzic, R., Horsley, M. K., Franey, J. J., & Bassett, K. (2016). Teaching in a Digital Age: How Educators Use Technology to Improve Student Learning. *Journal of Research on Technology in Education, 48*(3), 194-211.

McLeod, S. A. (2014). *Attitudes and behavior*. Retrieved November 10, 2017, from Simplypsychology.org: www.simplypsychology.org/attitudes.html

Merriam, S. B., Caffarella, R., & Baumgartner, L. M. (2007). *Learning in adulthood: A comprehensive guide* (3rd ed.). San Francisco, CA: Jossey-Bass.

Mishra, P., & Koehler, M. (2006). Technological Pedalogical Content Knowledge: A Frameworkfor Teacher Knowledge. *Teachers College Record, 108*(6), pp. 1017-1054.

Moritz, C. (2017, July 7). *Technology in the English Classroom*. Retrieved December 16, 2017, from Jobs in Japan: https://jobsinjapan.com/blog/living-in-japan-guide/technology-english-classroom/

Morse, J. (1995). The Significance of Saturation. *Qualitative Health Research, 5*(2), 147-149.

Moses, J., & Knutsen, T. (2012). *Ways of knowing: Competing methodologies in social and political research* (2nd Edition ed.). Basingstoke, UK: Palgrave Macmillan.

O'Brien, A. (2014, November 20). *When Teachers and Administrators Collaborate*. Retrieved November 27, 2017, from Edutopia: https://www.edutopia.org/blog/when-teachers-and-administrators-collaborate-anne-obrien

OECD. (2015). *Students Computers and Learning: making the Connection.* Retrieved from http://www.oecd.org/education/school/Students-Computers-Learning-Making-the-Connection-Infographic%20.pdf

OECD. (2016). *Innovating Education and Educating for Innovation: The Power of Digital Technologies and Skills*. Retrieved from OECD, Publishing, Paris: http://dx.doi.org/10.1787/9789264265097-en

Oliver, P. (2010). *The Student's Guide to Research Ethics* (Second Edition ed.). Maidenhead, England: Open University Press.

Onwuegbuzie, A. J., & Leech, N. L. (2007). Validity and qualitative research: An oxymoron? *Quality and Quantity, 41*(2), 233-249.

Peachey, N. (2016, January 27). *11 Reasons why teachers don't use technology.* Retrieved February 4, 2018, from Linkedin : https://www.linkedin.com/pulse/11-reasons-why-teachers-dont-use-technology-nik-peachey/

Poggenpoel, M., & Myburgh, S. (2003). The Researcher as Research Instrument in Educational Research: A possible Treat to Trustworthiness. *Education, 124*(2), 418-21.

Potuck, M. (2017, January 7). *If You Truly Want to become Tech Savy, You'll Need This.....* Retrieved October 14, 2017, from 9to5mac: https://9to5mac.com/.../become-tech-savvy-if-you-truly-want-to-improve-youll-need-...

Prensky, M. (2001, October). Digital Natives, Digital Immigrants. *On the Horizon, 9*(5).

Puentedura, R. (2013). *SAMR: A Contextualized Introduction*. Retrieved October 18, 2017, from http://hippasus.com/rrpweblog/

QSR International. (n.d.). *NVivio*. Retrieved August 15, 2017, from QSR International: http://www.qsrinternational.com/nvivo-product/nvivo-mac

Rainie, L., Anderson, J., & Connolly, J. (2014). *Killer Apps in the Gigabit Age*. (P. Foundation, Producer) Retrieved Novermber 13, 2017, from Pew Research Center: www.pewInternet.org/2014/10/09/killer-apps-in-the-gigabit-age/

Rawstorne, P., Jayasuriya, R., & Caputi, P. (2000). Issues in Predicting and Explaining Usage Behaviors with the Technology Acceptance Modeland the Theory of Planned Behaior When Usage is Mandatory. *ICIS 2000 Proceedings*, (p. Paper 5).

Reeves, T. D., & Marbach-Ad, G. (2016). Contemporary Test Validity in Theory and Practice: A Primer for Discipline-Based Education Researchers. *CBE Life Sciences Education, 15*(1).

Reinders, H., & White, C. (2016). 20 Years of Autonomy and Technology: How Far Have We Come and Where to Next. *Language Learninga and Technology, 20*(2), 143-154.

Romrell, D., Kidder, L. C., & Wood, E. (2014). The SAMR model as a framework for evaluating mLearning. *Online Learning, 18*(2).

Salcito, A. (2010, December 31). *Japan's progress on infusing technology into the classroom* . Retrieved December 16, 2017, from Microsoft Developer: https://blogs.msdn.microsoft.com/microsoftuseducation/2010/12/31/japans-progress-on-infusing-technology-into-the-classroom/

Sarkar, M. (2014). Challenges in Conducting Educational Research: The Case of a Developing Country. *Contemporary Approaches to Research in Mathematics, Science, Health and Environmental Education 6, 6*.

Sayer, A. (2000). *Realism and Social Science.* London: Sage .

Schofield, J. W. (2002). Increasing the Generalisability in Qualitative research. In M. Huberman, & M. B. Miles, *The Qualitative Researcher's Companion* (pp. 171-204). Thousand Oaks, CA: Sage Publications Ltd.

Sedley, A., & Müller, H. (2013, April 27–May 2,). Minimizing Change Aversion for the Google Drive Launch. *CHI 2013 Extended Abstracts on Human Factors in Computing Systems ACM 978-1-4503-1952-2/13/04.*, (pp. 2351-2354). Paris.

Seelye, H. N. (1997). The Cultural Mazeway: Six Organizing Goals. In P. R. Heusinkveld, *Pathways to culture: readings on teaching culture in the foreign language class.* Yarmouth, ME: Intercultural Press.

Selwyn, N. (2009). Faceworking: exploring students' education-related use of Facebook . *Learning, Media and Technology , 34*(2), 157–174.

Selwyn, N. (2012, February). Making sense of young people, education and digital technology: the role of sociological theory. *Oxford Review of Education, 38*(1), 81-96.

Selwyn, N. (2016). *Is Technology Good for Education? .* Cambridge, UK: Polity Press.

Selwyn, N. (2017). *Education and Technology* (2nd Edition ed.). London, UK: Bloomsbury Academic.

Selwyn, N., & Facer, K. (2014). The sociology of education and digital technology: Past, present and future. *Review of Education, 40*(4), 482-496.

Sharkey, A. J. (2016). Should we welcome robot teachers? *Ethics and Information Technology, 18*(4), 283-297.

Siemens, G. (2004). *Connectivism: A Learning Theory for the Digital Age.* Retrieved July 17, 2017, from http://www.elearnspace.org/Articles/connectivism.htm

Silverman, D. (1994). *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction.* London, UK: Sage Publications Ltd.

Song, Y., & Kong, S. C. (2017, January). Affordances and constraints of BYOD (Bring Your Own Device) for learning and teaching in higher education: Teachers' perspectives. *The Internet and Higher Education, 32*, 39-46.

Stastia. (2017). *Number of smartphone users in Japan from 2015 to 2022*. Retrieved August 17, 2017, from Stastia: https://www.statista.com/statistics/275099/number-of-smartphone-users-in-japan/

Straub, E. T. (2009, June). Understanding Technology Adoption: Theory and Future Directions for Informal Learning. *Review of Educational Research , 79*(2), 625–649 .

Strauss, A., & Corbin, J. (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques.* London: Sage.

Sugimoto, C., Hank, C., Bowman, T., & Pomerantz, J. (2015). Friend or faculty: Social networking sites, dual relationships, and context collapse in higher education. *First Monday, 20*(3).

Suzuki, Y. (2012, April 7). Retrieved December 16, 2017, from Are Japanese People Digitally Excluded?: https://sites.google.com/a/umn.edu/are-japanese-students-digitally-excluded/about-this-website

Taylor, L., & Underwood, S. (2015, May 28). *Laurie Taylor on academics v administrators.* Retrieved January 7, 2018, from Times Higher Education: https://www.timeshighereducation.com/content/laurie-taylor-on-academics-v-administrators

The Embassy of Japan in the UK. (2014). *Japan's Strategies for Student Mobility towards 2020.* Retrieved November 28, 2017, from The Embassy of Japan in the UK: http://www.uk.emb-japan.go.jp/en/study/strategies.pdf

Tsinakos, A. (2013, October). State of mobile learning around the world. In A. Tsinakos, & M. Ally, *Global Mobile Learning Implementation and Trends* (pp. 4-44). Beijing, China: China Central Radio & TV University Press.

Turkle, S. (2011). *Alone Together: Why W Expect More From Technology and Less From Each Other.* New York: Basic Books.

UNESCO. (2012). *Turning on mobile learning in Asia.* UNESCO. http://unesdoc.unesco.org/images/0021/002162/216283E.pdf.

UNESCO. (2013). *UNESCO policy guidelines for mobile learning.* Paris: UNESCO.

Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science, 46*(2), 186–204 .

Venkatesh, V., Morris, M. G., & Ackerman, P. L. (2000, September). A Longitudinal Field Investigation of Gender Differences in Individual Technology Adoption Decision-Making Processes. *Organizational Behavior and Human Decision Processes, 83*(1), 33–60.

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003, September). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly, 27*(3), 425-478.

Vostal, F. (2016). *Accelerating Academia The Changing Structure of Academic Time.* Baingstoke, Hampshire, UK: Palgrave Macmillan.Wajcman, J. (2010). Feminist theories of technology. *Cambridge Journal of Economics, 34*(1), 143-152.

Walker, N. N. (2003, August 1). *Technology and Japanese High Schools: Why Technology Integration Will Take Time*. Retrieved December 16, 2017, from Tech & Learning: http://www.techlearning.com/news/0002/technology-and-japanese-high-schools-why-technology-integration-will-take-time/55769

Wejnert, B. (2002). Integrating Models of Diffusion of Innovations: A Conceptual Framework. *Annual Review Of Sociology, 28*, 297–326.

Wenger, E. (2000). Communities of Practice and Social Learning Systems. *Organization, 7*(2), 225-246.

Williams, K. F. (2009). 'Guilty knowledge': Ethical aporia emergent in the research practice of educational development practitioners. *London Review of Education, 7*(3), 211-221.

Appendix 1 Interview questions

Questions for teachers	Follow up questions
1. Do you have a mobile phone? If so, in what ways do you use it in your daily life?	What type of phone is it? Do you feel confident using it?
2. In what ways have you used technology in the classroom?	Student computers, teacher computer/w projector, interactive activities with students
3. What do you think of students using mobile phones in the classroom? a. What rules do you have for students using mobile phones in the classroom?	Do you feel able to prevent students from misusing phones, what do you do if you find students misusing their phones?
4. Have you ever instructed students to use mobile devices for learning purposes? If so what did you instruct them to do?	Checking dictionaries? Researching? Watching videos? Interactive gaming? Online workbooks?
5. Would you like mobile phones to be used more in student learning?	Why? Why not? How? What might be important issues to keep in mind?
6. Would you ever try using Kahoot or quizlet?	What would put you off using this in the classroom?
7. What affects your decision to use mobile phones in the classroom?	Your tech ability? The university equipment? Support from tech staff?
8. What do you think of being asked to try new technology in the classroom by colleagues or the university administration?	Do you relish the challenge? Do you fear making a fool of yourself in front of the students? Do you begrudge wasting valuable teaching time?
9. Do you feel pressure to change your teaching to keep up with new technology in the workplace?	Do you wonder if it's worth learning new tricks when your current teaching style was good enough. Does it make you feel out of touch?
10. In what ways does the university or Ministry of Education support teachers in using technology?	Training? Equipment? Grants? Workshops?
11. In the future how can you imagine mobile phones being used for learning?	

Questions for students	Follow up Questions
1. Do you have a mobile phone? If so, in what ways do you use it in your daily life?	What type of phone do you have? What games do you like using? Do you do shopping, banking, reading on it? Skyping, Facebook
2. What type of experiences have you had using technology in the classroom?	Computer classrooms Teacher using computers Students using computers Students using other gadgets Presentations
3. In what ways does the university support students in using technology?	Lending equipment Staff assistance Charging phones Repairing broken phones Workshops
4. How have teachers encouraged you to use mobile phones in class?	Setting homework Allowing use of dictionaries on phones Using phones for classroom activities. Taking photographs.
5. Would you like mobile phones to be used more in your learning?	Why? Why not? How? What might be important issues to keep in mind?
6. In what ways do you use your mobile phone to study independently?	Do you use your phone for research? Writing reports? Quizlet? Online activities? Online workbooks Khan Academy
7. What would encourage you to use your mobile phone to study more?	Support? encouragement from teachers? better activities? Better software?
8. How do you feel about Kahoot or quizlet?	Would you like it if your teacher used these applications?
9. What type of support would you like to help you use your mobile phone for learning?	Online support, workshops, teaching how to use, tech lab in the university
10. In the future how can you imagine mobile phones being used for learning?	

Questions for Administration	Notes
1. What type of rules does the university have for the use of mobile phones within the university?	
2. What type of protection does the university offer students against online harassment?	
3. In what ways does the university support teachers in using technology?	
4. In what ways does the university support students in the use of technology?	
5. What pressures does the university feel to implement new technology?	
6. Does the university have any plans for increasing or changing technology within the university?	
7. Does the university have any plans for the implementation of mobile learning in the future?	
8. What type of requests have been made for technology use or purchase within the university in the last semester?	
9. How are decisions made in purchasing technology in the university?	
10. Can you describe the roles of the technology support staff and the academic affairs office in the implementation of technology within the university?	

Appendix 2 Ethics Authorization

Dear Frances Shiobara	
I am pleased to inform you that the EdD. Virtual Programme Research Ethics Committee (VPREC) has approved your application for ethical approval for your study. Details and conditions of the approval can be found below.	
Sub-Committee:	EdD. Virtual Programme Research Ethics Committee (VPREC)
Review type:	Expedited
PI:	
School:	Lifelong Learning
Title:	Use of Mobile Phones in Language Learning in a Japanese University Teacher, Student and Administrative Perceptions of Mobile Language Learning
First Reviewer:	Dr. Lucilla Crosta
Second Reviewer:	Dr.Viola Manokore
Other members of the Committee	Dr. Martin Gough, Dr. Rita Kop, Dr. Baaska Anderson, Dr. Kalman Winston
Date of Approval:	19/01/2017
The application was APPROVED subject to the following conditions:	
Conditions	
1 Mandatory	M: All serious adverse events must be reported to the VPREC within 24 hours of their occurrence, via the EdD Thesis Primary Supervisor.

This approval applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, the Sub-Committee should be notified. If it is proposed to make an amendment to the research, you should notify the Sub-Committee by following the Notice of Amendment procedure outlined at http://www.liv.ac.uk/media/livacuk/researchethics/notice%20of%20amendment.doc.

Where your research includes elements that are not conducted in the UK, approval to proceed is further conditional upon a thorough risk assessment of the site and local permission to carry out the research, including, where such a body exists, local research ethics committee approval. No documentation of local permission is required (a) if the researcher will simply be asking organizations to distribute research invitations on the researcher's behalf, or (b) if the researcher is using only public means to identify/contact participants. When medical, educational, or business records are analysed or used to identify potential research participants, the site needs to explicitly approve access to data for research purposes (even if the researcher normally has access to that data to perform his or her job).

Please note that the approval to proceed depends also on research proposal approval.

Kind regards,

Lucilla Crosta

Chair, EdD. VPREC